

CUSTOMER SERVICE IN EUROPE

ANNUAL REPORT 1985

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## CUSTOMER SERVICE IN EUROPE ANNUAL REPORT 1985

### ABSTRACT

This report summarises statistical data on European field services in France, U.K., West Germany, Italy, and the Benelux countries. This data is designed to help European customer service managers to identify user needs, current vendor performance, and user views on key topics.

Information provided on the European services market size is calculated from vendor data processing revenues and the percentage of service contribution to total revenues. The calculations are based on both vendor published data and INPUT market surveys.

User views in each company are analysed with a strong emphasis on field service response and repair times, systems availability, and quality of service ratings.

This report contains 179 pages, including 109 exhibits.



# CUSTOMER SERVICE IN EUROPE

## ANNUAL REPORT 1985

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## I INTRODUCTION





## I INTRODUCTION

### A. SCOPE

- INPUT's Customer Service Annual Report is designed to help European customer service managers identify user needs, current vendor performance, and user views about key topics.
- Some 456 users throughout Europe responded to the 1985 survey, although a high proportion of these were for the United Kingdom. Exhibit I-1 shows the distribution of the respondents in terms of location/product calls.
- Exhibit I-2 shows the user respondents by country.
- Exchange rates used in the study are given in Exhibit I-3.

### B. METHODOLOGY

- Questionnaires were mailed to data processing managers or their equivalents in the countries specified. The initial mailing was followed by repeat mailings in an attempt to increase the overall sample size.

## EXHIBIT I-1

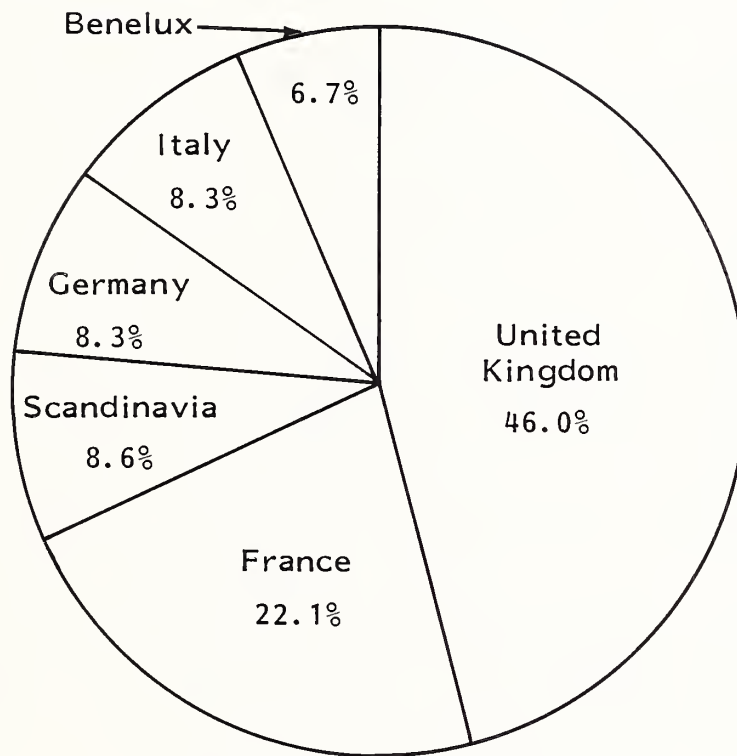
## ANALYSIS OF RESPONSES BY PRODUCT GROUP AND COUNTRY

	UNITED KINGDOM	FRANCE	WEST GERMANY	ITALY	BENELUX	SCANDI- NAVIA	TOTAL
Large Systems	94	43	17	28	13	18	213
Small Systems	167	73	25	34	10	21	330
Peripherals and Terminals	320	114	29	50	24	39	576
Data Communications Equipment	143	14	7	18	4	15	201
Personal Computers	155	28	10	25	13	10	241
Word Processors	78	10	3	-	7	10	108
Workstations	26	3	3	-	5	-	37
PBX	40	2	1	-	-	-	43
Copiers	74	8	8	-	4	-	94
Systems Software	114	16	19	-	-	-	149
Applications Software	80	7	10	-	-	-	97
Total	1,291	318	132	155	80	113	2,089



EXHIBIT 1-2

SURVEY RESPONDENTS BY COUNTRY



Total Responses = 456

# EXHIBIT I-3

## EXCHANGE RATES USED

\$1 EQUALS	
Pounds Sterling	£0.7
French Francs	7.56
German Marks	2.465
Italian Lira	1683.5
Dutch Guilders	2.777
Belgian Francs	50.375
Swedish Krone	7.5975
Norwegian Krone	7.5885
Danish Krone	8.9825

## II SERVICE MARKET SIZE



## II SERVICE MARKET SIZE

- INPUT estimates the total service market in Europe to have been \$8.9 billion with a possible range from \$6.5 billion at the low end to \$9.8 billion at the most optimistic.
- The total market size has been calculated from vendor-published data and other INPUT surveys. The two key items of data used are vendors' total European DP revenues and the percentage of service contribution to total revenues. The build-up of the estimate is shown in Exhibit II-1.
- The split of the total \$8.9 billion across individual countries is shown as Exhibit II-2. The analysis is based on data derived from a number of sources, including vendor response to INPUT surveys, published accounts, EEC published statistics, and OECD published statistics.
- Exhibit II-3 illustrates IBM's revenue dominance of the service market.



EXHIBIT II-1

SERVICE VENDOR EUROPEAN DP REVENUES AND ESTIMATED SERVICE  
1985 REVENUES

VENDOR	EUROPEAN DP REVENUE (\$ Millions)	SERVICE PERCENT OF REVENUE	ESTIMATED EUROPEAN SERVICE REVENUE (\$ Millions)
IBM	\$8,650	20.9%	\$1,800
DEC	1,980	25.4	500
Olivetti	1,685	25.3	430
ICL	1,020	21.0	215
Burroughs	1,040	22.8	240
Honeywell	1,090	38.1	415
Bull	2,100	23.0	480
Hewlett-Packard	1,620	16.1	260
Sperry	1,015	36.8	374
NCR	1,000	31.7	320
Independent Maintenance	276	100.0	276
Other	16,000	23.2	3,550
Total	\$37,476	23.6%	\$9,110

Source: INPUT Estimate

EXHIBIT II-2

EUROPEAN SERVICE REVENUE BY COUNTRY

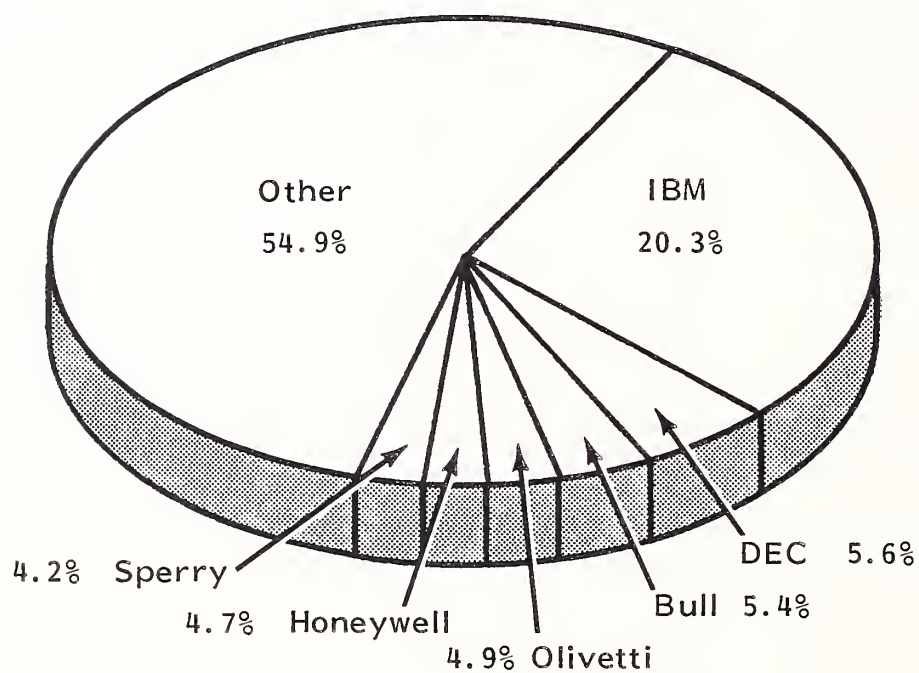
1985

COUNTRY	REVENUE (\$ Millions)	REVENUE (Millions, Local Currency)
West Germany	\$2,000	DM 4,930
United Kingdom	1,790	£ 1,244
France	1,755	FF 13,268
Italy	950	Lira 1.6 Billion
Netherlands	425	DF 1,180
Sweden	365	SEK 2,773
Switzerland	355	SF 738
Spain	340	SP 52.5 Billion
Belguim	255	BF 12.8 Billion
Denmark	205	DK 1,841
Austria	195	AS 3,379
Norway	180	NK 1,366
Finland	45	FM 244
Total	\$8,860	-

Source: INPUT Estimate

EXHIBIT II-3

SERVICE MARKET SHARE OF LEADING VENDORS



Percent of Total Market of \$8,860 Million

Source: INPUT Estimate

### III EUROPEAN SUMMARY



### III EUROPEAN SUMMARY

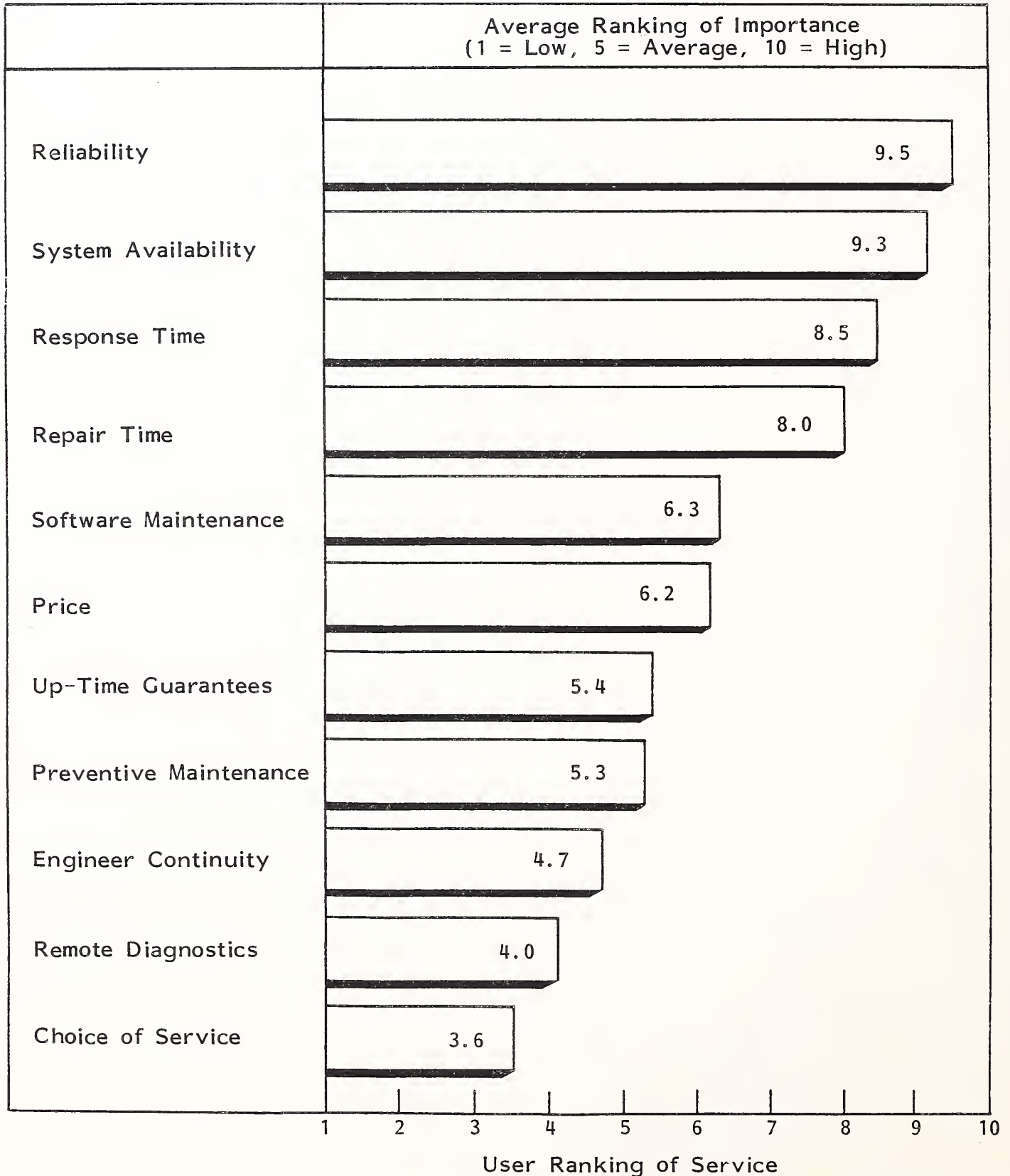
#### A. IMPORTANCE OF SERVICE FACTORS

- European users were asked to rank a number of service elements in order of importance, with II as the most important and I as the least. Exhibit III-1 shows the result of that ranking in terms of average ranking for each service element.
- As in previous studies, the most important factor for users are:
  - System reliability.
  - System availability.
  - Response time.
  - Repair time.
- Not unnaturally, these elements are interrelated and to some extent mutually consequential. The key objective of the user is, therefore, to keep his system up and running as much as possible.
- There is an element of product dependency in this, and Exhibit III-2 shows how various elements become increasingly important as product criticality changes.



# EXHIBIT III-1

## RELATIVE IMPORTANCE OF SERVICE FACTORS: EUROPE (Average Ranking)



Source: INPUT 1985 User Survey.

EXHIBIT III-2

IMPORTANCE OF SERVICE ELEMENTS: EUROPE

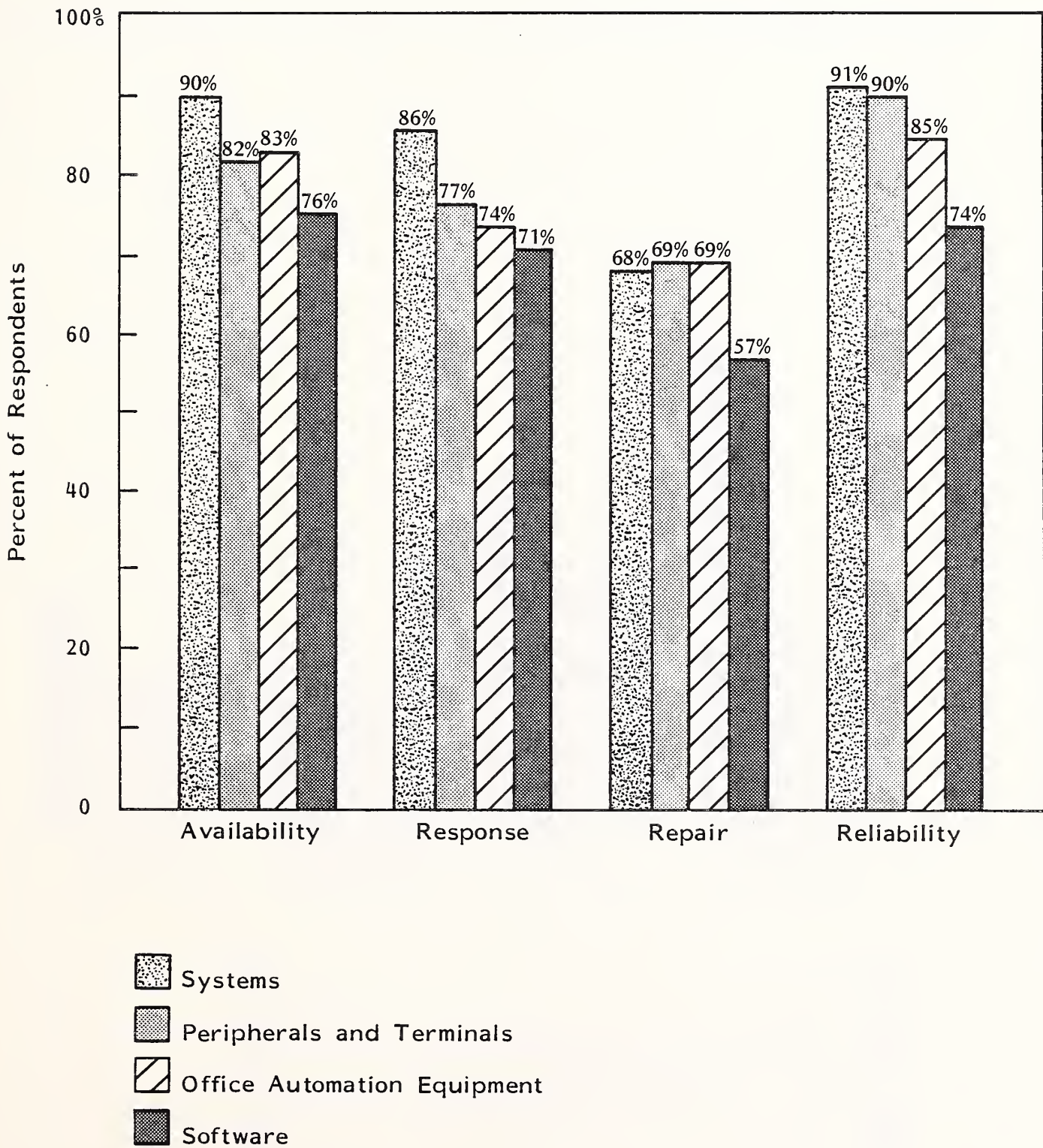


EXHIBIT III-2 (Cont.)

IMPORTANCE OF SERVICE ELEMENTS: EUROPE

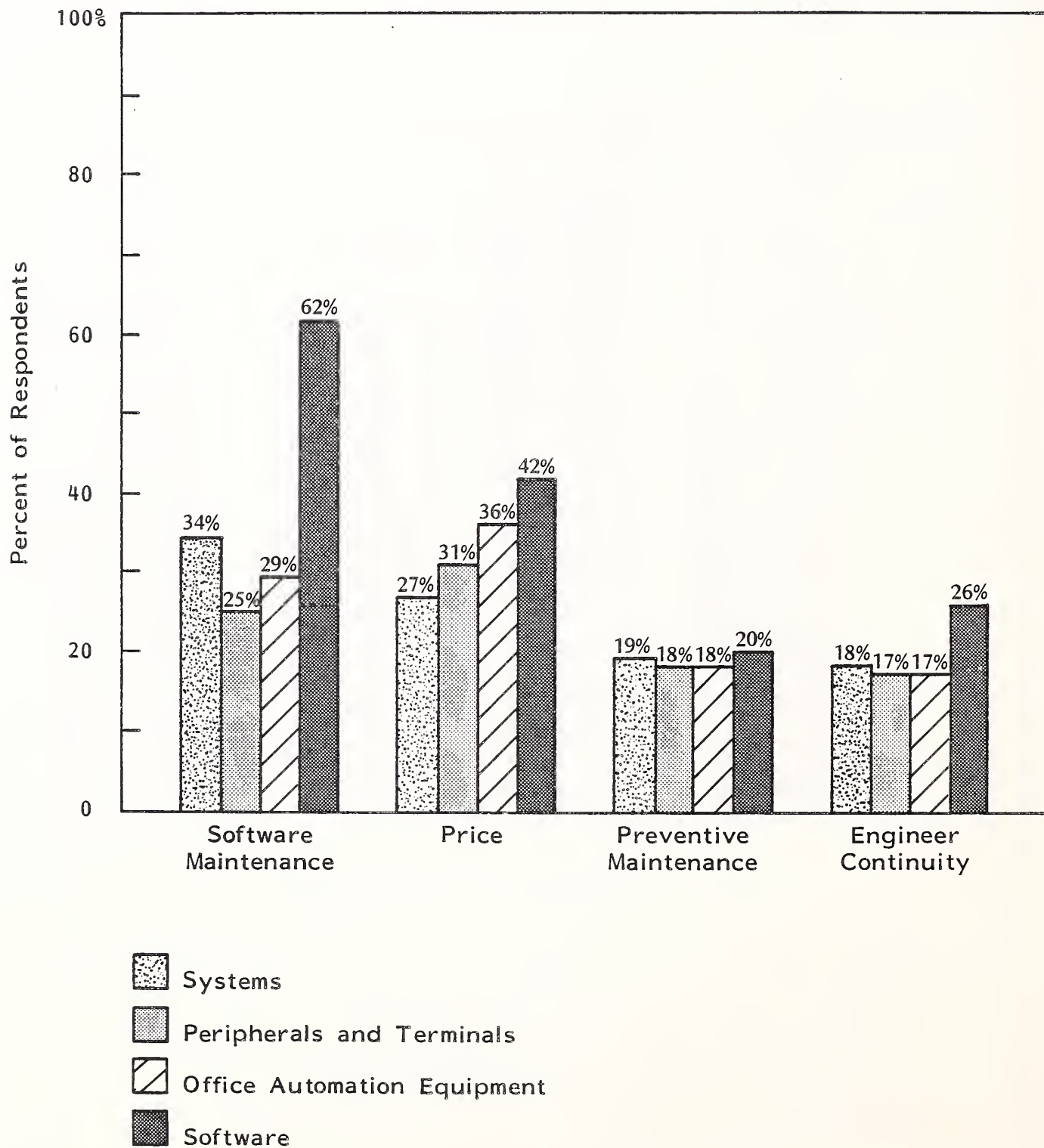
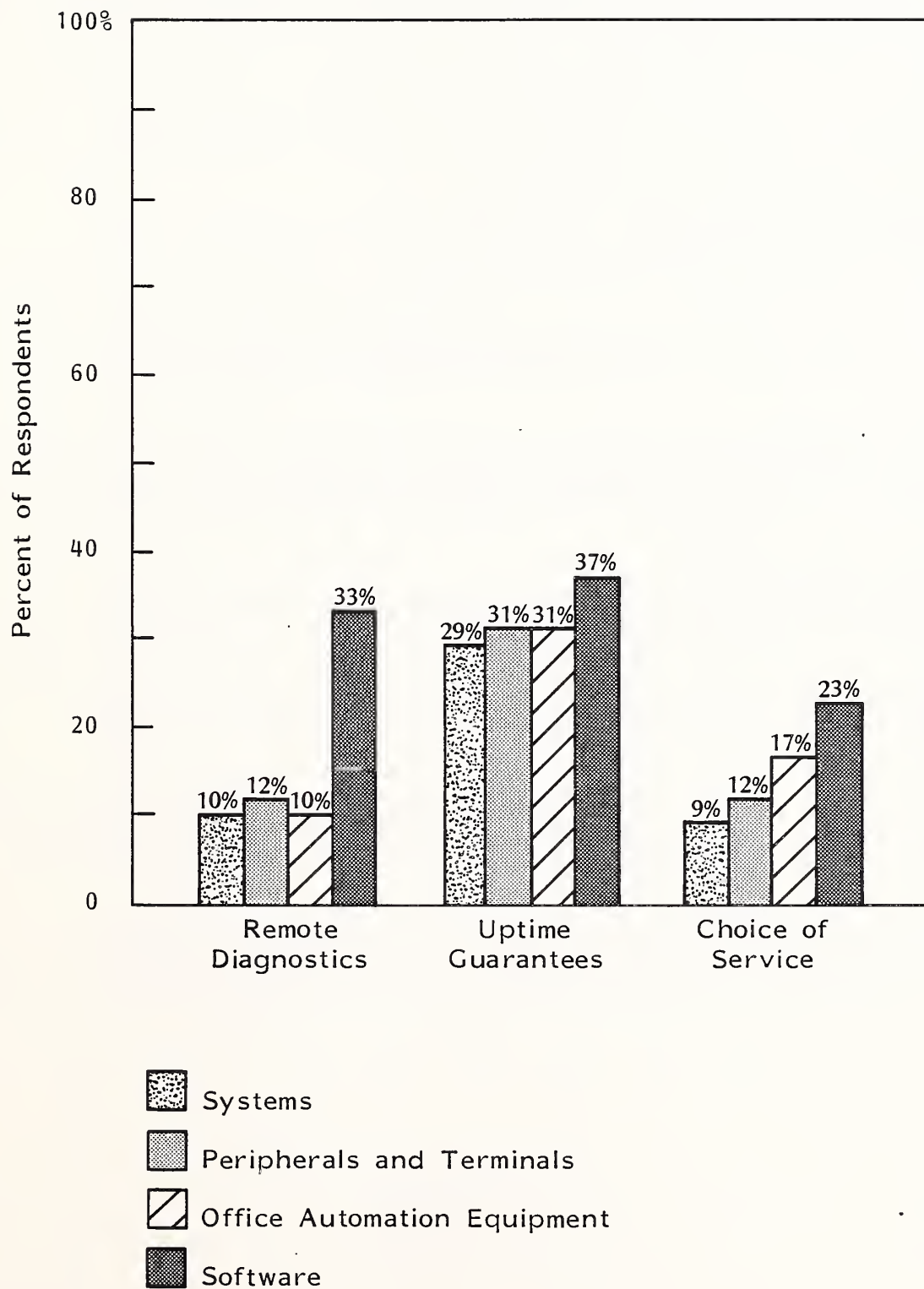




EXHIBIT III-2 (Cont.)

IMPORTANCE OF SERVICE ELEMENTS: EUROPE



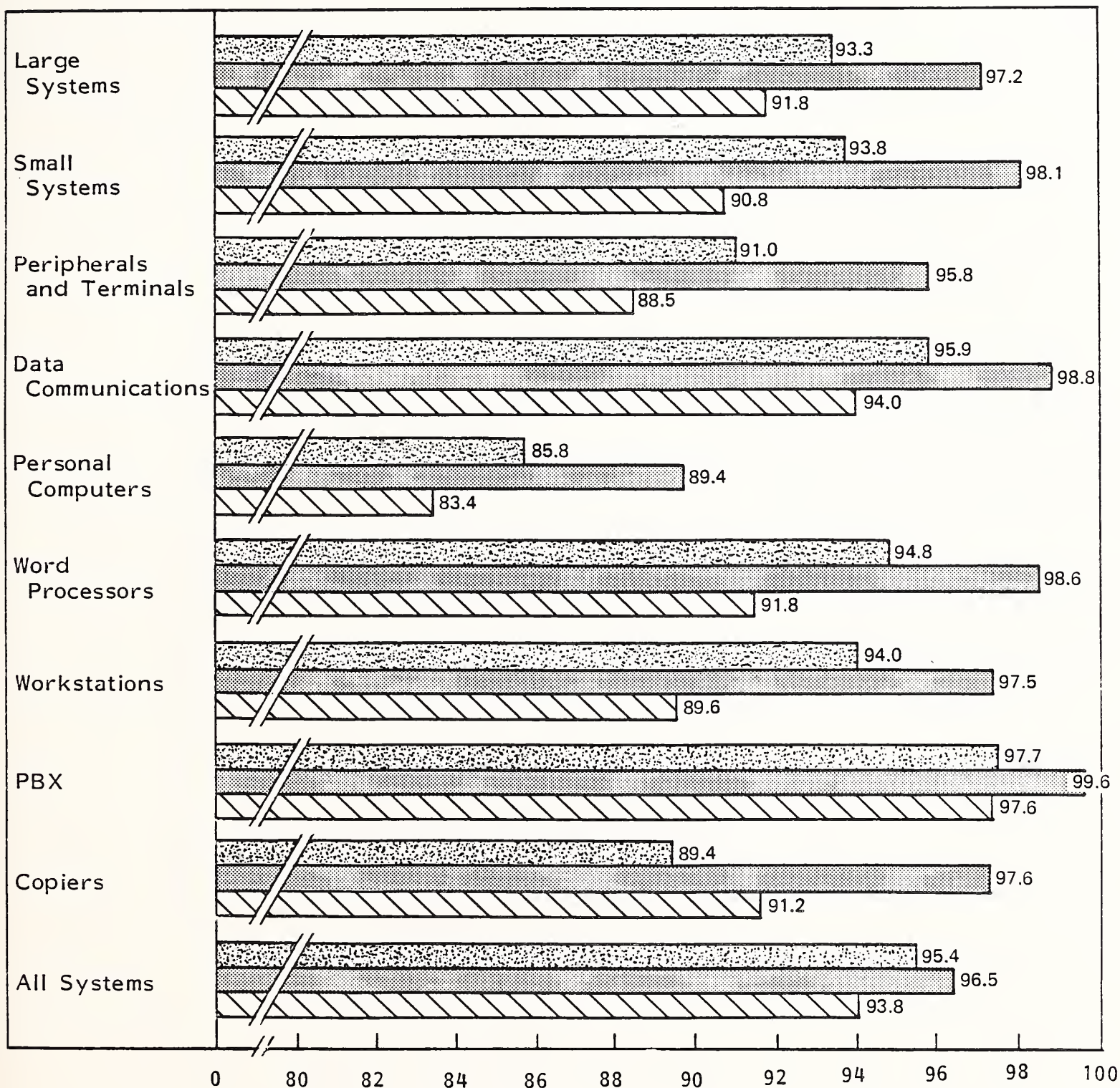
## B. SYSTEM AVAILABILITY

- As can be seen in Exhibit III-3, the actual system availability being experienced by users is generally less than the user ideal, but rather better than the lowest acceptable level. In the case of copiers, however, current levels of availability are totally unacceptable in that they fail to meet the users' lowest level of acceptability.

## C. RESPONSE AND REPAIR TIMES

- Exhibit III-4 compares the current response time being experienced by users with the ideal and the lowest tolerable waiting time.
- As can be seen, vendors do not reach the ideal response time for any product except workstations, but do respond within a tolerable timeframe for all product groups.
- The picture is the same for repair times, with user ideals being much higher than current vendor performance, but showing a tolerance limit which is much lower.
- The total scene is, therefore, that repair turnarounds are much lower than users would like, but are faster than users are prepared to tolerate.

SYSTEM AVAILABILITY: ACTUAL COMPARED TO IDEAL  
(Minimum Acceptable)



Actual

Ideal

Threshold of Pain

Source: INPUT Survey



## EXHIBIT III-4

## EUROPEAN RESPONDENTS' VIEW OF RESPONSE AND REPAIR TIMES, 1985

PRODUCT CLASSIFICATION	RESPONSE TIME (Hours)			REPAIR TIME (Hours)		
	CURRENTLY RECEIVE	IDEAL	T.O.P.*	CURRENTLY RECEIVE	IDEAL	T.O.P.*
<u>Systems</u>						
Large Systems	3.1	1.8	4.4	3.2	1.5	4.7
Small Systems	5.2	2.5	7.2	2.7	1.7	5.2
Peripherals and Terminals	7.7	3.6	10.2	4.8	2.1	7.6
Data Communications	6.3	3.0	8.0	3.2	1.9	4.5
<u>Office Products</u>						
Personal Computers	12.8	7.6	20.8	6.2	2.2	9.7
Word Processors	9.5	5.1	10.6	4.5	1.4	5.5
Workstations	4.7	5.1	7.6	1.2	0.9	2.2
PBX	2.3	1.4	7.0	1.4	1.0	2.8
Copiers	7.6	4.2	12.2	2.4	1.5	4.7
All Systems in Europe	6.6	3.3	9.5	4.0	1.9	6.4

\*T.O.P. = Threshold of Pain (Maximum Time Acceptable to User).

## EXHIBIT III-4 (Cont.)

## EUROPEAN RESPONDENTS' VIEW OF RESPONSE AND REPAIR TIMES, 1985

PRODUCT CLASSIFICATION	TOTAL RESPONSE AND REPAIR TIME (Hours)		
	CURRENTLY RECEIVE	IDEAL	T.O.P.*
<u>Systems</u>			
Large Systems	6.3	3.3	9.1
Small Systems	7.9	4.2	12.4
Peripherals and Terminals	12.5	5.7	17.8
Data Communications	9.5	4.9	12.5
<u>Office Products</u>			
Personal Computers	19.0	9.8	30.5
Word Processors	14.0	6.5	16.1
Workstations	5.9	6.0	9.8
PBX	3.7	2.4	9.8
Copiers	10.0	5.7	16.9
All Systems in Europe	10.6	5.2	15.9

\*T.O.P. = Threshold of Pain (Maximum Time Acceptable to User).



#### IV GERMANY



## IV GERMANY

### A. THE GERMAN USER DATABASE

- Exhibit IV-1 shows the distribution of installed equipment for this user database and Exhibit IV-2 shows the distribution by industry.

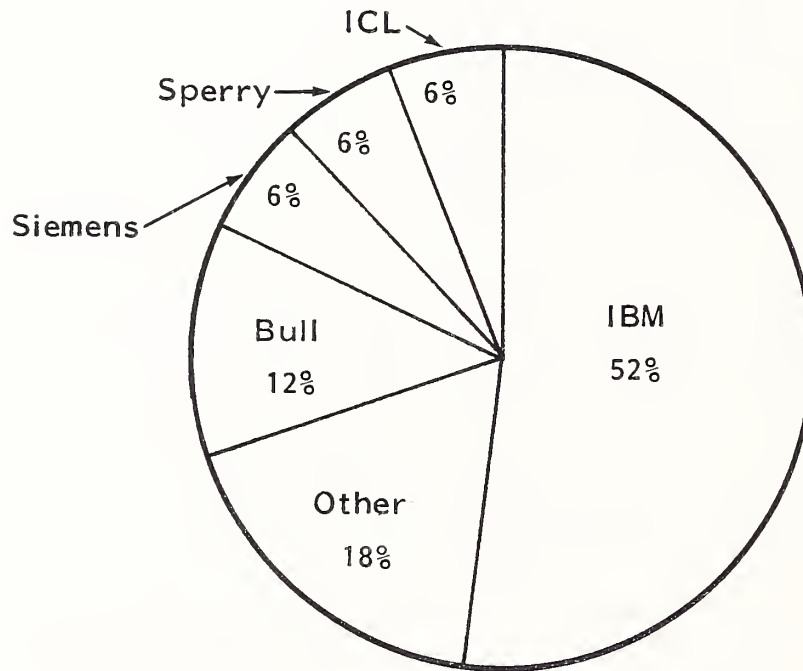
### B. QUALITY OF SERVICE RATINGS

- Exhibit IV-3 shows the relative important of service factors to German users.
- Overall quality of service has deteriorated, averaging 7.1 compared with 7.3 in 1984.
- The only areas in which quality of service has improved are:
  - Small systems.
  - Word processors.
- Exhibit IV-4 shows the user ratings of service, illustrating the change in quality of service since 1983.
- Exhibit IV-5 summarises user ratings of service quality.



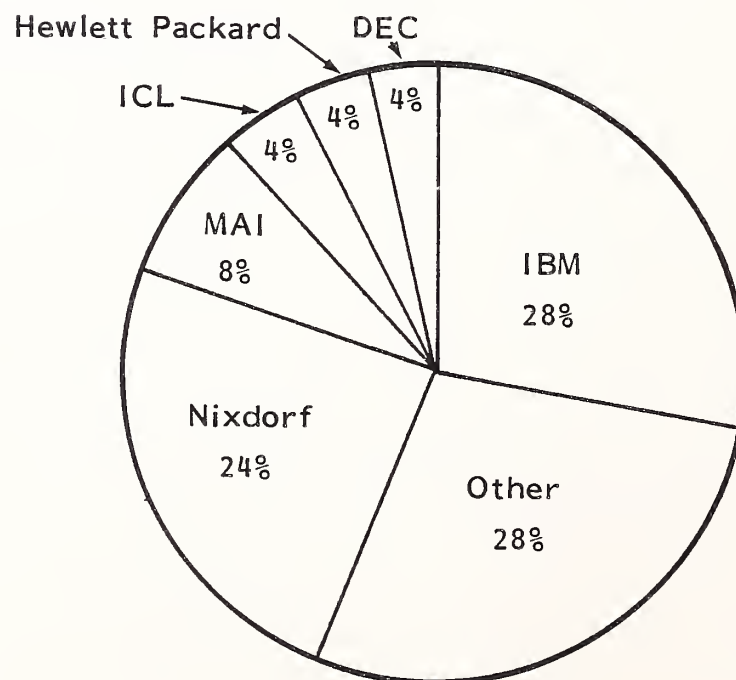
# EXHIBIT IV-1

## GERMAN RESPONDENTS' INSTALLED EQUIPMENT (Percent Using)



Large Systems

Sample Size: 17

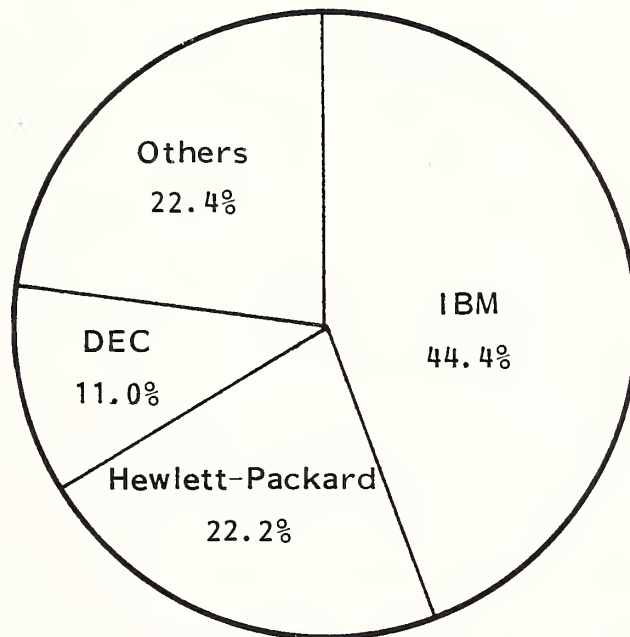


Small Systems

Sample Size: 25

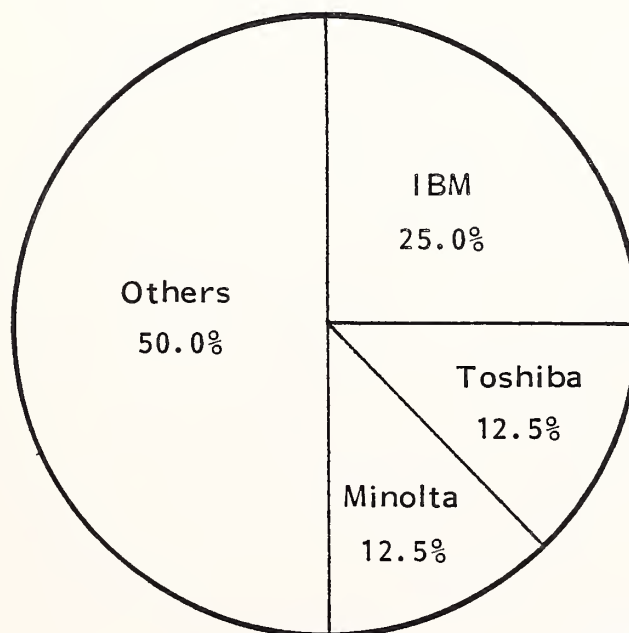
EXHIBIT IV-1 (Cont.)

GERMAN RESPONDENTS' INSTALLED EQUIPMENT  
(Percent Using)



Sample Size: 9

Personal Computers

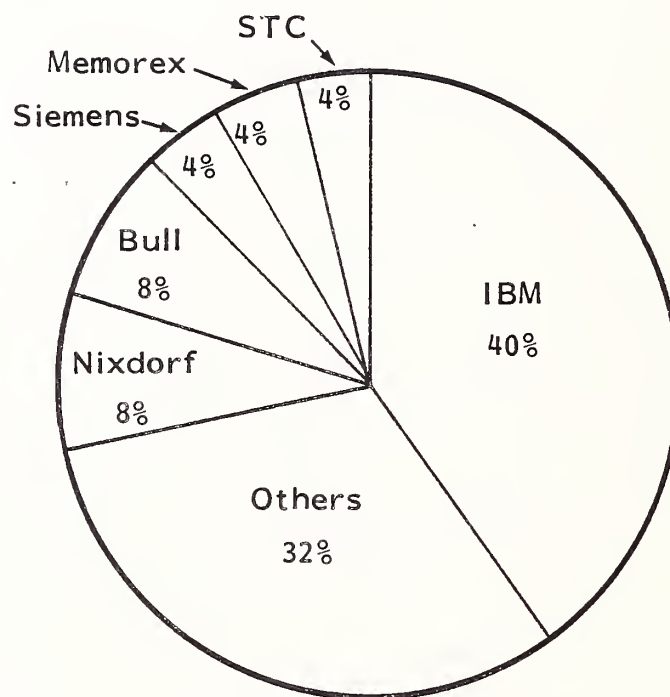


Sample Size: 8

Copiers

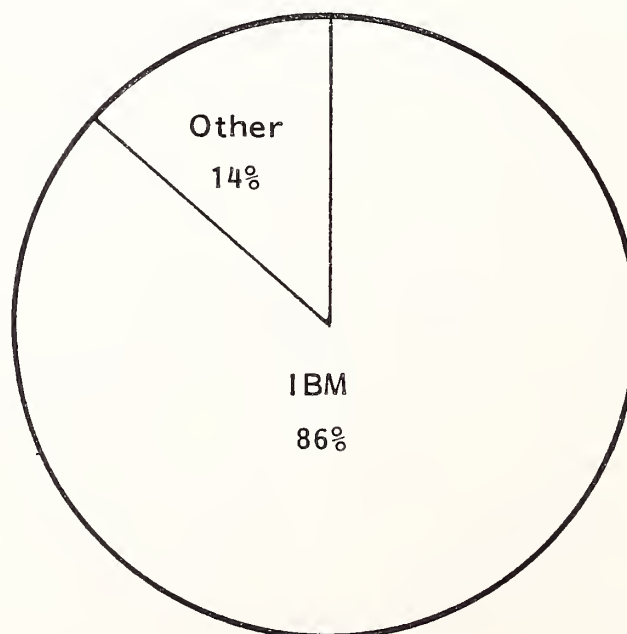
EXHIBIT IV-1 (Cont.)

GERMAN RESPONDENTS' INSTALLED EQUIPMENT  
(Percent Using)



Peripherals and Terminals

Sample Size: 25

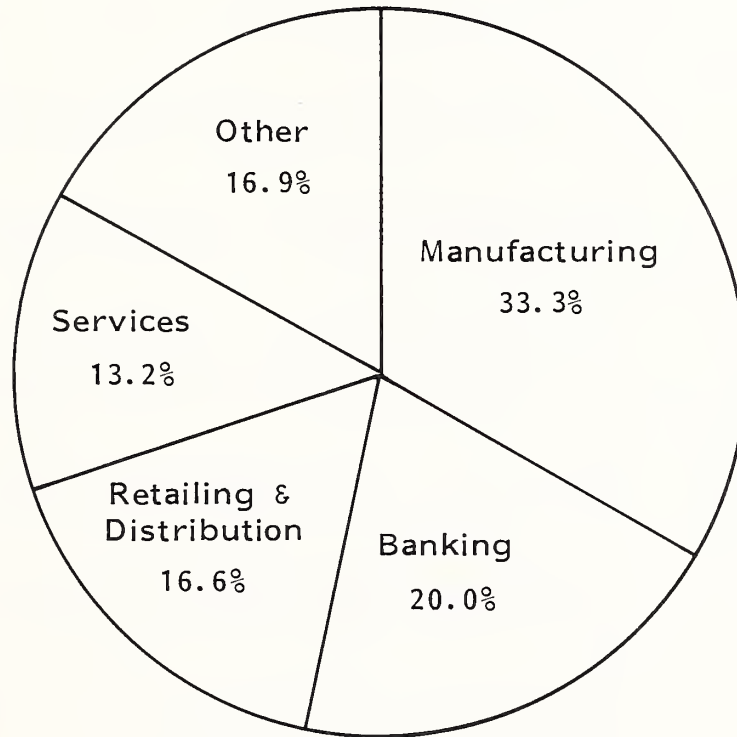


Data Communications

Sample Size: 7

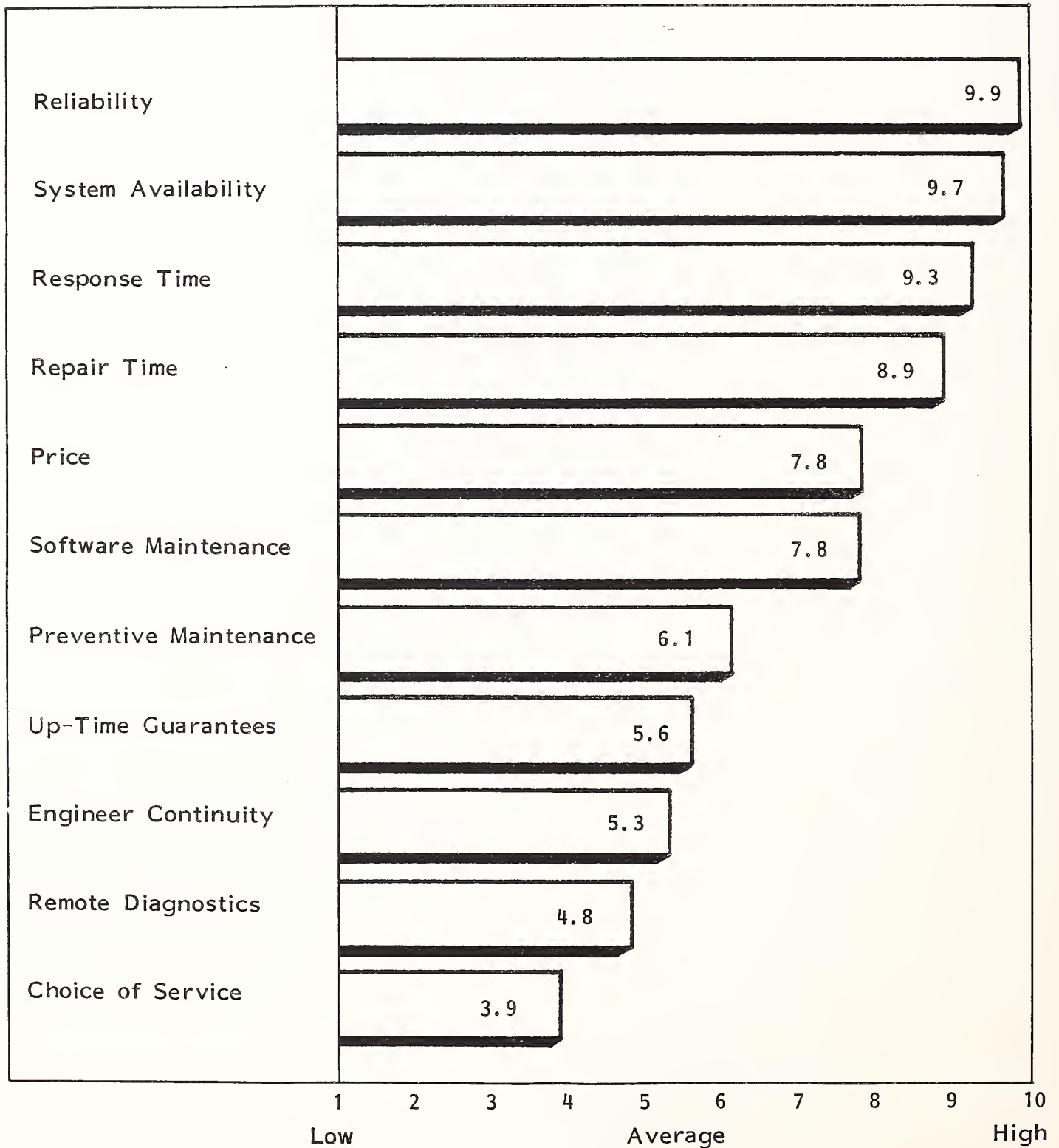
EXHIBIT IV-2

PROFILE OF USERS BY INDUSTRY SECTOR  
GERMANY



# EXHIBIT VI-3

## RELATIVE IMPORTANCE OF SERVICE FACTORS: GERMANY (Average Ranking)



Average Rating of Importance

## GERMAN USERS' QUALITY-OF-SERVICE RATING

PRODUCT SEGMENT	OVERALL QUALITY OF SERVICE			QUALITY OF ENGINEERS			QUALITY OF SERVICE OF MANAGEMENT			AVAILABILITY OF SPARE PARTS			SOFTWARE SUPPORT CAPABILITY		
	1985	1984	1983	1985	1984	1983	1985	1984	1983	1985	1984	1983	1985	1984	1983
All Systems	7.1	7.3	-	7.2	7.4	-	6.2	6.9	-	7.1	7.4	-	6.2	6.1	-
Large Systems	6.8	7.5	7.6	6.9	7.5	8.1	5.8	6.9	6.9	6.2	7.3	7.4	6.3	6.0	6.6
Small Systems	7.7	7.0	7.8	7.7	7.3	7.6	6.6	6.7	7.0	7.5	7.3	7.2	5.7	5.3	6.6
Peripherals and Terminals	7.3	7.4	7.4	7.5	7.4	8.0	6.0	7.1	7.3	7.0	7.6	7.6	6.4	6.1	6.2
Data Communications	7.0	7.8	7.7	7.8	7.4	8.4	6.2	7.3	7.9	6.8	7.9	7.8	5.3	5.7	7.1
Personal Computers	6.2	6.3	9.0	6.2	6.5	9.0	5.7	6.1	9.0	6.7	7.1	10.0	5.7	5.8	8.0
Word Processors	7.0	6.8	7.5	7.7	6.7	7.9	6.3	6.5	7.8	7.0	6.8	8.0	5.0	6.2	7.2
Workstations	6.5	7.5	-	7.0	7.7	-	6.0	6.4	-	8.0	6.8	-	-	5.2	-
Copiers	6.3	7.1	7.3	6.5	7.2	6.5	6.2	6.6	6.6	7.7	7.3	7.0	6.0	-	-
PBX	-	7.2	7.9	-	7.7	8.1	-	7.3	6.8	-	7.4	7.4	-	6.5	6.0
Systems Software	6.7	7.0	7.6	6.0	7.4	7.8	6.0	7.1	7.0	-	-	-	6.0	6.7	6.5
Applications Software	6.8	6.7	6.5	7.0	6.5	7.3	7.0	6.5	7.6	-	-	-	7.3	7.0	6.2

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: INPUT Survey



**EXHIBIT IV-4 (Cont.)**  
**GERMAN USERS' QUALITY-OF-SERVICE RATING**

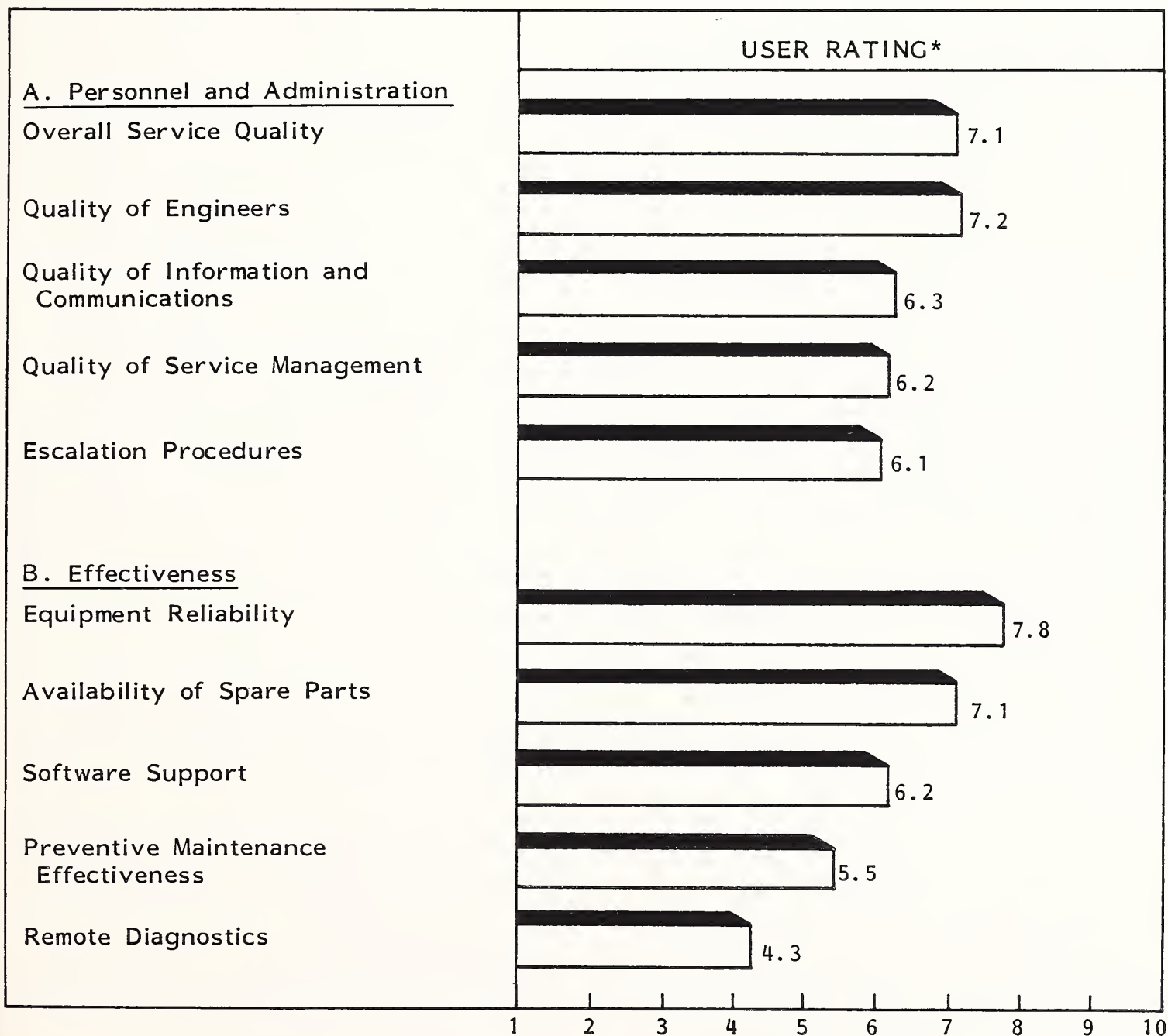
PRODUCT SEGMENT	PREVENTIVE MAINTENANCE EFFECTIVENESS			REMOTE DIAGNOSTICS			QUALITY OF INFORMATION & COMMUNICATIONS			VALUE OF SERVICE COMPARED TO PRICE			PRODUCT RELIABILITY		
	1985	1984	1983	1985	1984	1983	1985	1984	1983	1985	1984	1983	1985	1984	1983
All Systems	5.5	6.2	6.6	4.3	5.5	5.6	6.3	7.2	7.0	5.5	5.5	5.9	7.8	7.8	7.8
Large Systems	5.6	6.1	6.8	5.4	5.7	5.9	6.1	7.1	7.1	4.7	5.4	5.7	7.7	7.9	7.8
Small Systems	5.1	5.8	6.6	4.8	5.7	5.5	6.3	6.7	6.8	5.5	5.4	6.3	8.0	8.2	8.1
Peripherals and Terminals	5.7	6.3	6.8	3.4	4.7	5.7	6.7	7.6	7.0	5.7	5.7	6.0	8.0	7.6	7.6
Data Communications	4.8	7.1	6.2	-	6.6	6.5	5.8	8.1	7.8	5.2	5.8	5.8	8.2	8.5	7.9
Personal Computers	5.0	5.9	8.0	5.0	-	-	5.2	6.9	8.0	4.7	4.9	-	7.8	7.9	-
Word Processors	6.5	5.6	6.3	6.0	-	6.7	8.0	5.7	7.8	5.3	5.0	6.4	7.3	7.7	-
Workstations	6.0	6.3	-	6.5	3.5	-	5.0	6.0	-	5.0	5.6	-	8.0	7.6	-
Copiers	6.8	5.9	4.7	4.7	2.5	5.2	6.3	7.0	6.4	5.3	4.8	4.4	8.2	6.6	6.2
Systems Software	6.8	6.2	5.9	4.7	6.6	4.9	6.3	6.6	6.9	5.3	5.3	5.9	8.2	7.9	8.2
Applications Software	5.0	7.4	3.8	1.5	7.2	4.2	6.7	6.7	7.0	5.7	5.3	5.1	6.0	6.8	6.6

Rating: 1 = Poor, 5 = Average, 10 = Excellent

Source: INPUT Survey

# EXHIBIT IV-5

## SUMMARY OF GERMAN USER RATINGS OF SERVICE QUALITY



Source: INPUT User Survey.

### C. SYSTEM AVAILABILITY

- System availability is below users' ideal levels with the exception of systems software.
- In all product categories, users obtain a level of system availability above the minimum acceptable--90.5% against 88.9% minimum for all systems.
- The overall picture represents a significant degradation compared to 1984 and 1983. System availability has consistently fallen from 95.1% in 1983 to 93.8% in 1984 and 90.5% in 1985.
- The 1985 results show that users have a higher 'threshold of pain' (minimum acceptable level) than last year. The only exception to this is for copiers.
- See Exhibit IV-6 for details.

### D. RESPONSE AND REPAIR TIMES

- Response times are longer than the users' ideal. Across all products, the current response time is 5.8 hours against the user ideal of 2.7 hours.
- Repair times (3.7 hours for all systems) are also longer than users would ideally like. Repair times are particularly poor for personal computers.
- The current turnaround time of 9.5 hours for all products is within users' maximum acceptable time of 11.9 hours, although it is still well above the users' ideal of 4.4 hours.

EXHIBIT IV-6

GERMAN RESPONDENTS' VIEW OF SYSTEM AVAILABILITY

LEVEL OF SYSTEM AVAILABILITY			Systemst						Office Productst						Softwarest	
			Systemst			Systemst			Systemst			Systemst			Systemst	
			Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Personal Computers	Word Processors	Workstations	PBX	Copiers	Systems	Applications	All Systems in Germany		
1985																
Current	90.2%	90.7%	87.3%	96.0%	89.3%	99.7%	82.5%	-	89.0%	100.0%	97.7%	90.5%				
Ideal	97.9	98.6	92.7	99.0	94.5	99.7	100.0	-	96.0	99.0	98.3	96.7				
T.O.P. *	93.5	88.6	86.7	94.3	88.7	80.0	70.0	-	93.6	92.5	94.5	88.9				
1984																
Current	95.2	93.7	93.3	98.4	85.7	96.1	94.7	93.3%	88.1	96.8	83.7	93.8				
Ideal	98.3	97.9	97.4	99.2	95.4	97.7	97.5	94.8	93.9	98.9	92.0	97.5				
T.O.P. *	95.3	92.4	93.6	97.1	89.6	95.3	93.8	93.8	88.3	96.7	84.7	93.9				
1983																
Current	96.0	95.0	94.6	95.8	78.3	96.2	N/A	92.6	80.6	97.3	97.1	95.1				
Ideal	98.6	96.6	98.6	99.6	80.0	98.3	N/A	94.3	86.5	98.6	98.9	97.7				
T.O.P. *	93.0	87.9	91.3	92.8	66.3	90.6	N/A	89.8	67.5	N/A	94.3	94.4				

\*T.O.P. = Threshold of Pain (Maximum Time Acceptable to User).

†Percent of Available Time

Source: INPUT Survey.

- The most serious problems in turnaround times are for:
  - Systems software, taking 24.3 hours against a maximum acceptable time of 15 hours.
  - Applications software, taking 41.3 hours against a maximum acceptable time of 30.3 hours.
- Exhibits IV-7, IV-8 and IV-9 summarise the position.

#### E. USER VIEWS ON PRICING

- In 1984, users received higher maintenance pricing increases than they had expected with the exception of:
  - Small systems (received 3.1%, expected 4.8%).
  - Peripherals and terminals (received 2.8%, expected 4.7%).
- Exhibit IV-10 illustrates user price expectations during 1985.

#### F. USER COMPLAINTS ABOUT SERVICE

- The most common complaints about service are:
  - Response times, 19%.
  - Software support, 13%.
  - Recurring faults after repair, 8%.



## EXHIBIT IV-7

## GERMAN RESPONDENTS' VIEW OF RESPONSE AND REPAIR TIMES, 1985

PRODUCT CLASSIFICATION	RESPONSE TIME (Hours)			REPAIR TIME (Hours)		
	CURRENTLY RECEIVE	IDEAL	T.O.P.*	CURRENTLY RECEIVE	IDEAL	T.O.P.*
<u>Systems</u>						
Large Systems	2.4	0.8	3.2	1.9	1.1	2.9
Small Systems	6.1	2.3	6.0	2.1	1.3	3.4
Peripherals and Terminals	3.9	1.8	5.4	1.9	1.4	2.4
Data Communications	3.6	1.4	3.4	1.5	0.7	2.0
<u>Office Products</u>						
Personal Computers	20.7	9.9	29.0	9.0	3.3	4.6
Word Processors	5.7	2.7	7.7	1.3	1.3	5.0
Workstations	7.5	2.5	8.5	1.5	1.0	3.0
PBX	-	-	-	-	-	-
Copiers	8.5	6.7	16.4	1.8	1.4	3.9
<u>Software</u>						
Systems	4.0	2.7	4.0	20.3	4.3	11.0
Applications	3.3	2.0	7.3	38.0	11.0	23.0
All Systems in Germany	5.8	2.7	7.1	3.7	1.7	3.8

\*T.O.P. = Threshold of Pain (Maximum Time Acceptable to User).

Source: INPUT Survey

## EXHIBIT IV-7 (Cont.)

## GERMAN RESPONDENTS' VIEW OF RESPONSE AND REPAIR TIMES, 1985

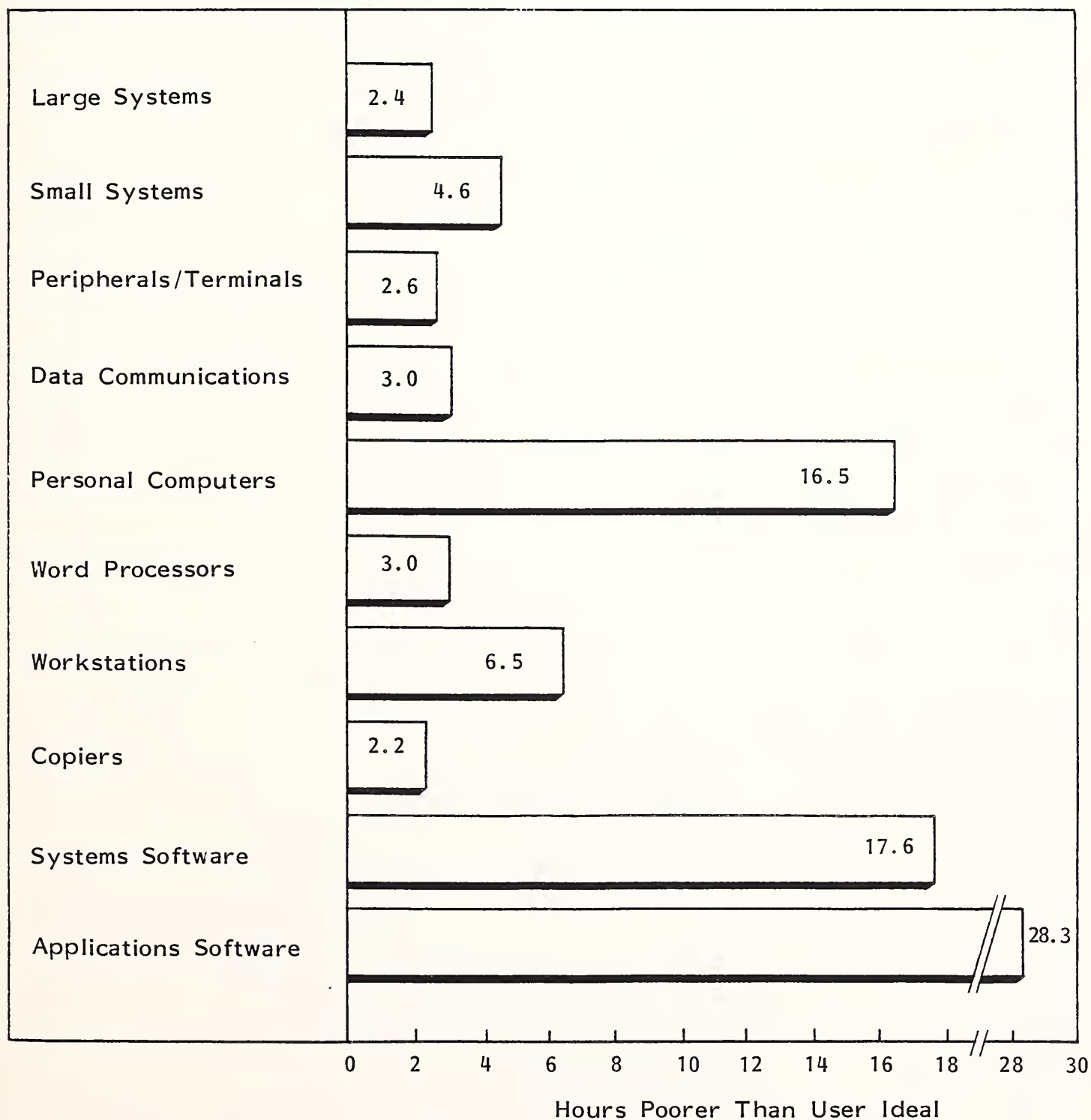
PRODUCT CLASSIFICATION	TOTAL RESPONSE AND REPAIR TIME (Hours)		
	CURRENTLY RECEIVE	IDEAL	T.O.P.*
<u>Systems</u>			
Large Systems	4.3	1.9	6.1
Small Systems	8.2	3.6	9.4
Peripherals and Terminals	5.8	3.2	7.8
Data Communications	5.1	2.1	5.4
<u>Office Products</u>			
Personal Computers	29.7	13.2	33.5
Word Processors	7.0	4.0	12.7
Workstations	9.0	3.5	11.5
PBX	-	-	-
Copiers	10.3	8.1	20.3
<u>Software</u>			
Systems	24.3	6.9	15.0
Applications	41.3	13.0	30.3
All Systems in Germany	9.5	4.4	11.9

\*T.O.P. = Threshold of Pain (Maximum Time Acceptable to User).



# EXHIBIT IV-8

## TURNAROUND TIME VARIANCE FROM GERMAN USER IDEAL



# EXHIBIT IV-9

## TURNAROUND TIME VARIANCE FROM GERMAN USERS' LONGEST ACCEPTABLE TIMES

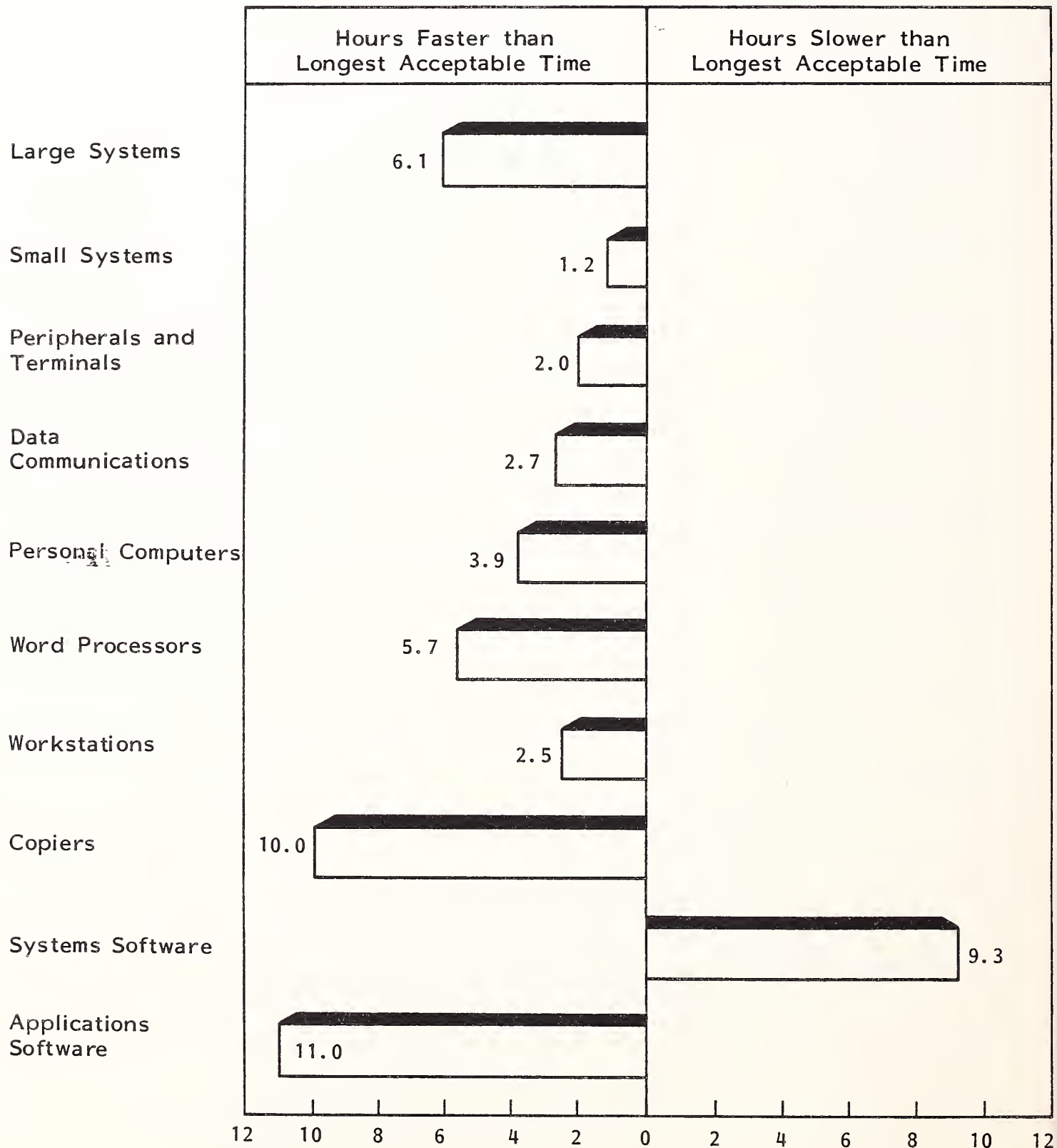


EXHIBIT IV-10

GERMAN RESPONDENTS' VIEW OF MAINTENANCE PRICING INCREASES

MAINTENANCE PRICE INCREASES		Systemst						Office Productst						Software†	
		Systemst						Office Productst						Software†	
		Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Personal Computers	Word Processors	Workstations	PBX	Copiers	Systems	Applications	All Systems in Germany		
<u>1985</u>															
Received 1984	5.5%	3.1%	2.8%	7.0%	0.0%	0.0%	-	-	-	0.0%	7.3%	8.3%	3.5%		
Expected 1985	4.6	2.7	2.3	2.5	2.2	1.5	-	-	-	1.6	3.3	1.7	2.8		
T.O.P. * 1985	8.5	5.9	6.4	7.0	8.8	8.3	-	-	-	5.5	5.3	7.0	6.8		
<u>1984</u>															
Received 1983	-	-	-	-	-	-	-	-	-	-	-	-	3.7		
Expected 1984	4.9	4.8	4.7	4.4	3.5	4.2	4.2	3.8	3.7	4.9	4.0	4.6			
T.O.P. * 1984	8.7	8.4	7.7	6.6	7.5	5.4	5.3	4.2	7.0	8.1	7.1	7.3			
<u>1983</u>															
Received 1982	5.8	5.5	6.1	5.1	3.8	3.8	-	6.4	6.6	3.0	2.2	5.2			
Expected 1983	4.6	3.9	5.1	3.8	2.8	4.3	-	4.5	4.0	3.2	2.0	4.4			
T.O.P. * 1983	8.4	7.0	9.4	6.3	6.7	9.3	-	6.4	8.2	7.0	7.8	8.0			

\*T.O.P. = Threshold of Pain (Maximum Time Acceptable to User).

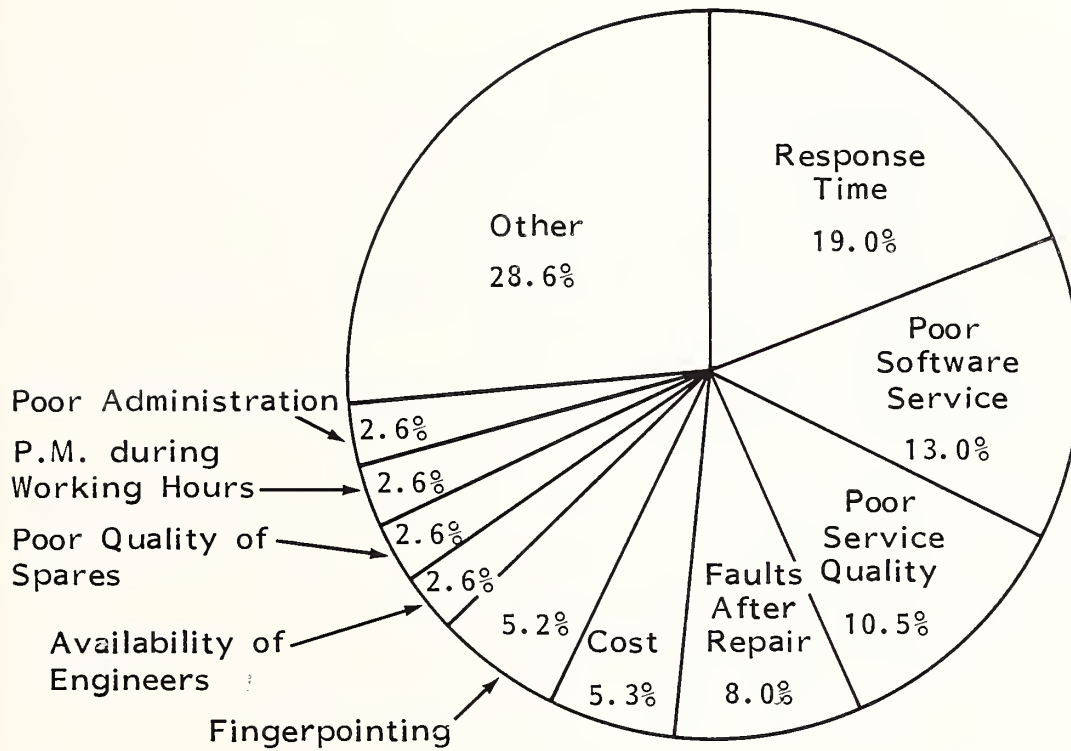
†Percent Price Increase

Source: INPUT Survey.

- Cost of maintenance accounts for 5.3% of the complaints.
- Exhibit IV-11 shows the complete picture.
- Exhibits IV-12 and IV-13 show the percentage of users who would be willing to pay for improved service and the percentages they would be willing to pay for the improvements.

EXHIBIT IV-11

GERMAN USER COMPLAINTS ABOUT SERVICE



# EXHIBIT IV-12

## PERCENTAGE OF GERMAN RESPONDENTS WHO ARE WILLING TO PAY FOR IMPROVED SERVICE

	Up-Time Guarantee	Response Time Guarantee	Software Turnaround	Software Consulting	Software Enhancement	Personalized Service
Large Systems	58.9%	70.6%	58.9%	58.9%	53.0%	53.0%
Small Systems	72.0	76.0	60.0	60.0	56.0	60.0
Peripherals and Terminals	60.0	68.0	48.0	48.0	44.0	52.0
Data Communications	66.7	83.3	66.7	66.7	66.7	66.7
Personal Computers	55.5	66.7	33.3	33.3	33.3	66.7
Word Processors	66.6	66.6	66.6	33.3	33.3	33.3
Copiers	50.0	37.5	25.0	25.0	37.5	37.5
Systems Software	27.3	18.2	27.3	27.3	27.3	18.2
Applications Software	30.0	20.0	30.0	30.0	30.0	20.0



# EXHIBIT IV-13

## PERCENTAGE ABOVE BASE THAT GERMAN RESPONDENTS WOULD BE WILLING TO PAY FOR EXTRA/IMPROVED SERVICE

	Up-Time Guarantee	Response Time Guarantee	Software Turnaround	Software Consulting	Software Enhancement	Personalized Service
Large Systems	3.5%	2.3%	1.3%	4.7%	2.9%	4.7%
Small Systems	4.4	3.1	6.1	5.6	7.3	3.3
Peripherals and Terminals	6.2	2.3	2.6	4.6	4.7	3.3
Data Communications	10.0	3.0	2.5	2.5	2.5	2.5
Personal Computers	4.0	0.0	0.0	0.0	0.0	3.3
Word Processors	5.5	5.0	0.5	1.0	1.0	2.0
Copiers	5.0	0.7	0.0	0.5	2.7	0.3
Systems Software	3.3	5.0	3.3	3.3	3.3	5.0
Applications Software	3.3	0.0	0.0	0.0	3.3	7.5
All Systems	5.0	2.4	2.9	3.9	4.3	3.5



V FRANCE



## V FRANCE

### A. INTRODUCTION

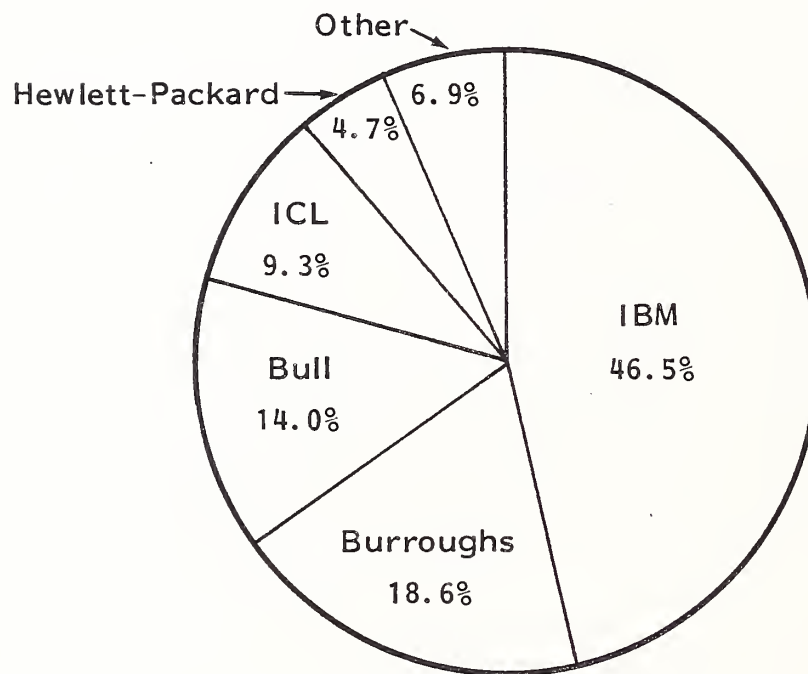
- The French results are based on 101 responses. The hardware used by the respondents is shown in Exhibit V-1.
- Most respondents were in the manufacturing sector, while government bodies the next most significant sector, as can be seen in Exhibit V-2.

### B. IMPORTANCE OF SERVICE ELEMENTS

- Exhibit V-3 shows the relative importance of the various service options to users. As is usually the case, the four most important factors are:
  - Reliability.
  - System availability.
  - Response time.
  - Repair time.

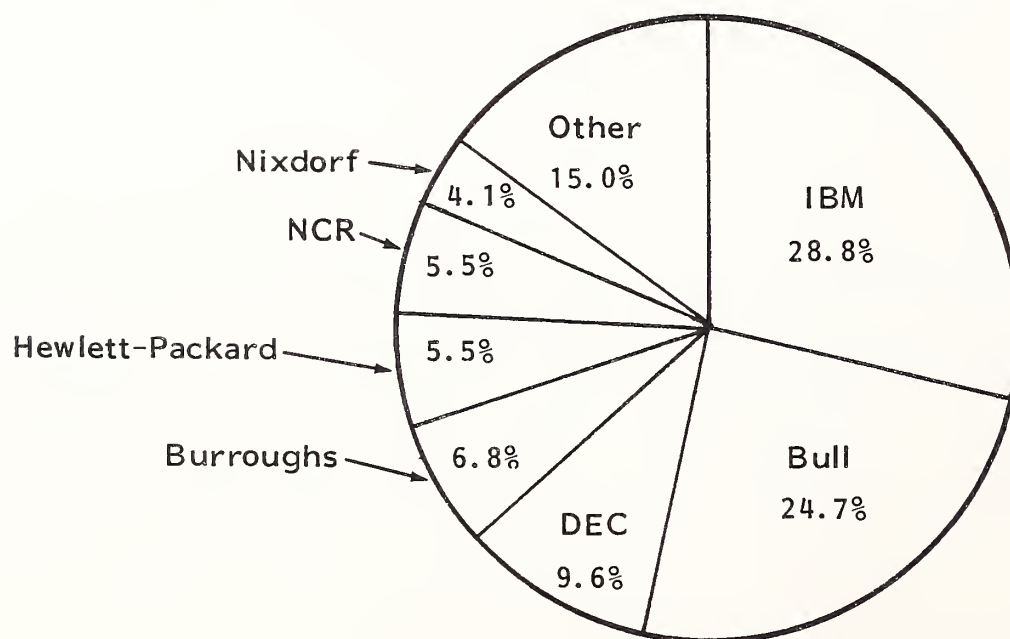
# EXHIBIT V-1

## FRENCH RESPONDENTS' INSTALLED EQUIPMENT (Percent Using)



Large Systems

Sample Size: 43



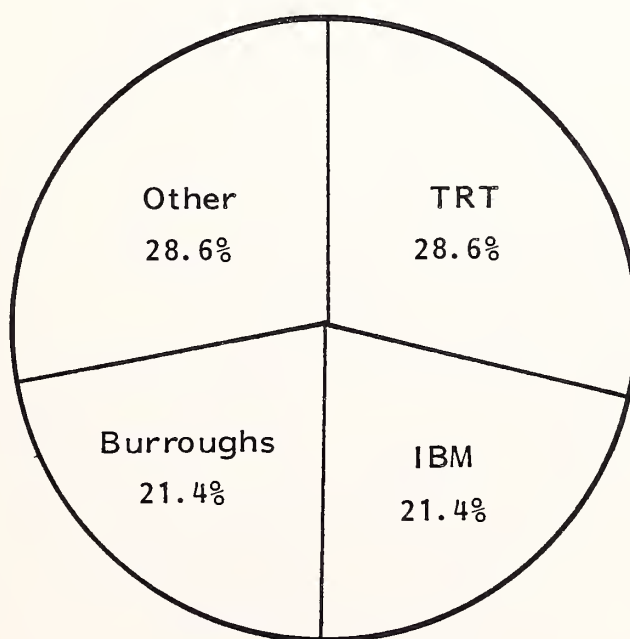
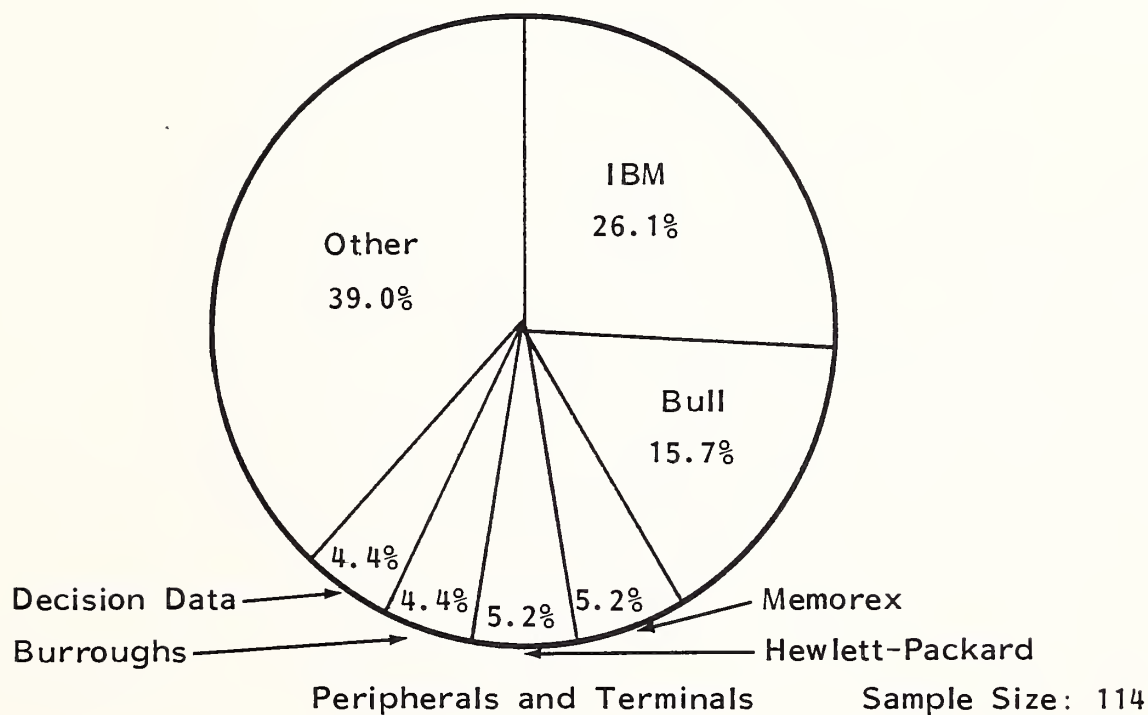
Small Systems

Sample Size: 73



# EXHIBIT V-1 (Cont.)

## FRENCH RESPONDENTS' INSTALLED EQUIPMENT (Percent Using)

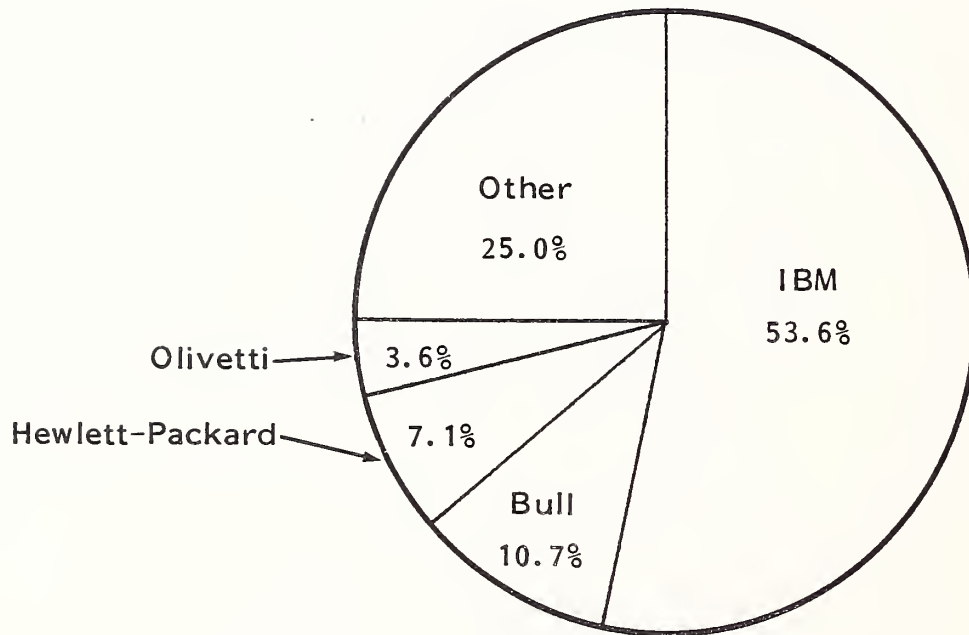


Data Communications  
(Modems and Multiplexers)

Sample Size: 14

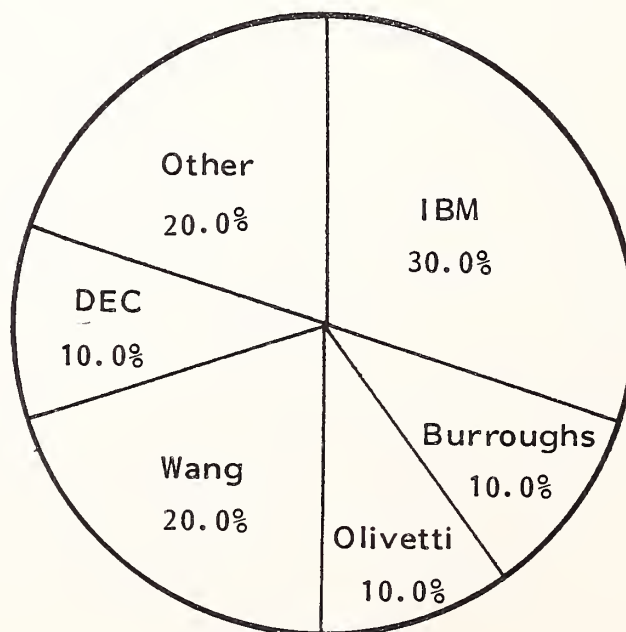
EXHIBIT V-1 (Cont.)

FRENCH RESPONDENTS' INSTALLED EQUIPMENT  
(Percent Using)



Personal Computers

Sample Size: 28

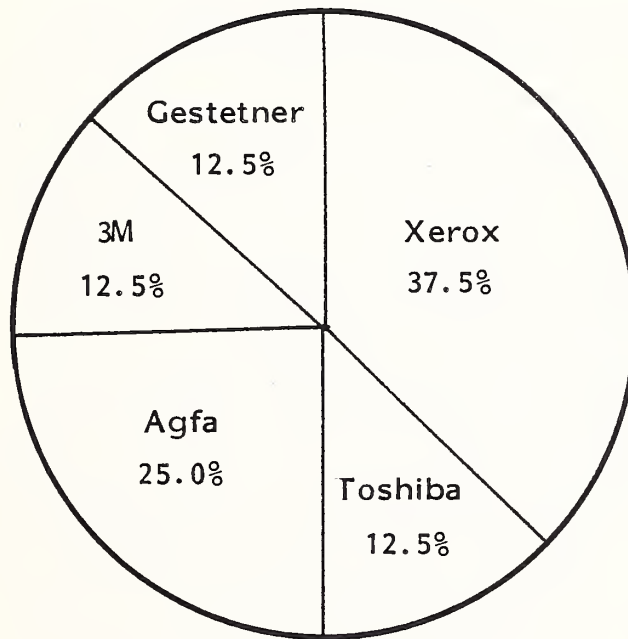


Word Processing

Sample Size: 10

EXHIBIT V-1 (Cont.)

FRENCH RESPONDENTS' INSTALLED EQUIPMENT  
(Percent Using)



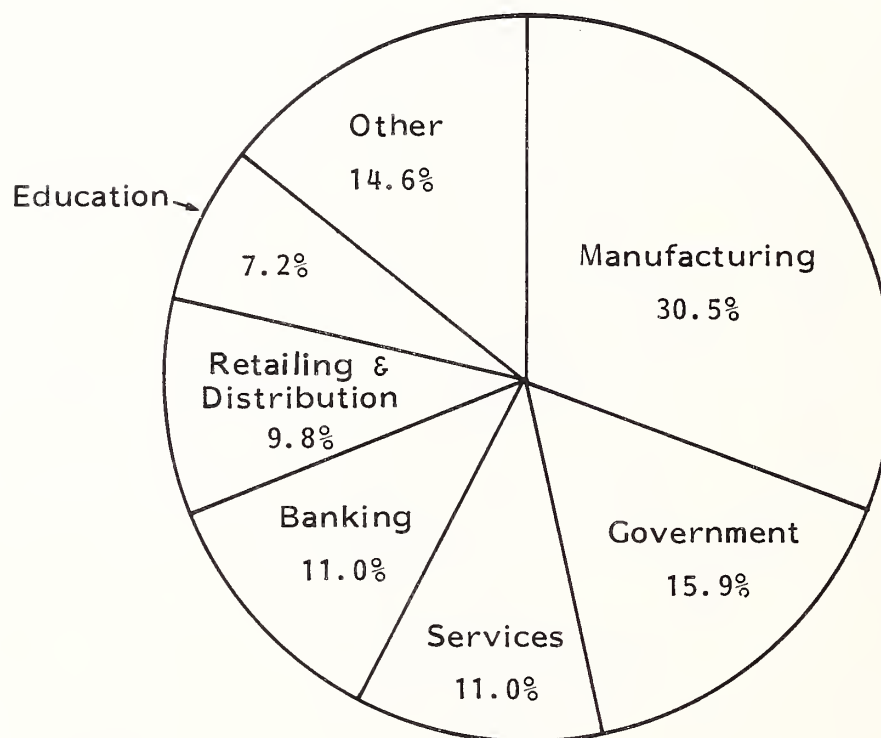
Copiers

Sample Size: 8

EXHIBIT V-2

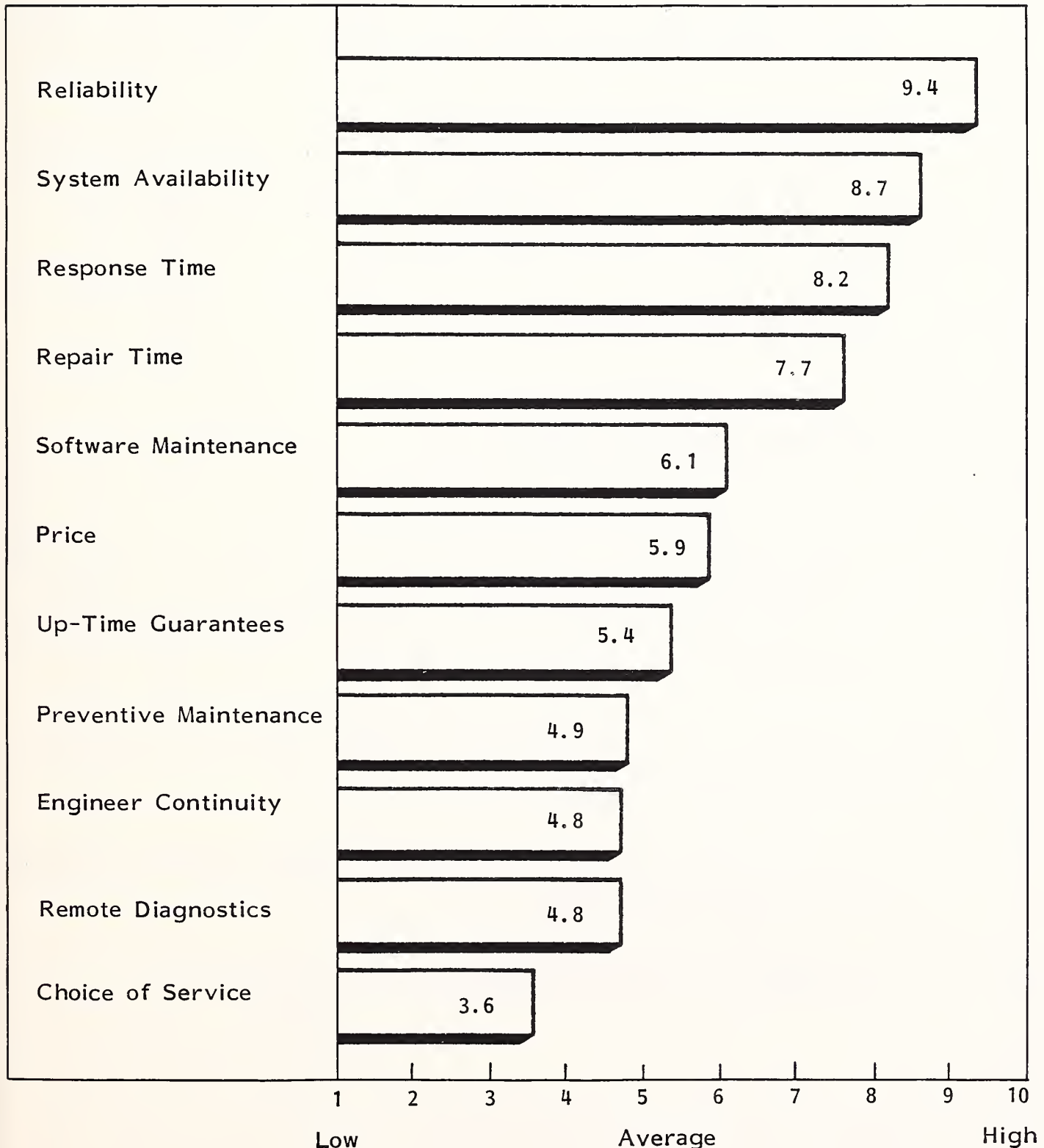
PROFILE OF RESPONDENTS BY INDUSTRY SECTOR

FRANCE



# EXHIBIT V-3

## RELATIVE IMPORTANCE OF SERVICE FACTORS: FRANCE (Average Ranking)



Average Ranking of Importance

- 47 -

### C. SYSTEM AVAILABILITY

- As shown in Exhibit V-4, system availability in France has improved slightly from 87.6% to 90.3%. As if in anticipation of this improvement, user ideal requirements have also increased from 89.2% to 95.5%. Thus, despite improvement, the vendor performance remains below user ideal requirements.
- Compared to the lowest acceptable level, however, vendors are delivering a barely acceptable level of performance. In most cases, the exceptions being word processing and copiers, availability is above the 'threshold of pain'.
- Exhibits V-5 and V-6 compare actual availability with user ideals and threshold of pain, respectively.

### D. RESPONSE AND REPAIR TIMES

- Overall response time in France compares poorly with the user ideal--6.1 hours compared to 3.1 hours--but is still faster than the users' threshold of pain of 8.2 hours. In the case of PCs, users are already receiving the ideal response time.
- Repair times, too, are generally longer than users would like, but shorter than they are prepared to accept.
- The overall time to fix (turnaround time) is therefore longer than ideal, but within limits of user tolerance.
- The position is summarised on Exhibits V-7 through V-9.



## FRENCH RESPONDENTS' VIEW OF SYSTEM AVAILABILITY

LEVELS OF SYSTEM AVAILABILITY			Systemst						Office Productst						Software†		
			Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Personal Computers	Word Processors	Workstations	PBX	Copiers	Systems	Applications	All Systems in France			
<u>1985</u>																	
Current			90.3%	92.8%	88.5%	93.3%	70.4%	92.5%	-	-	89.2%	91.0%	98.0%	90.3%			
Ideal			95.5	96.9	95.4	97.5	73.9	96.8	-	-	96.4	95.7	98.0	95.2			
T.O.P. *			87.1	89.6	84.9	92.1	65.9	94.3	-	-	91.4	85.3	90.0	87.3			
<u>1984</u>																	
Current			86.9	83.9	86.8	92.2	88.7	87.3	84.4	90.0	81.6	93.7	82.5	87.6			
Ideal			87.9	85.4	88.8	91.3	86.7	85.9	83.2	90.0	90.1	96.0	94.3	89.2			
T.O.P. *			84.4	80.3	86.0	87.5	83.2	82.9	77.2	90.0	85.6	88.8	88.9	85.2			
<u>1983</u>																	
Current			92.0	88.0	85.0	86.0	82.0	82.0	N/A	-	85.0	N/A	-	88.0			
Ideal			95.0	94.0	97.0	94.0	89.0	98.0	N/A	-	100.0	N/A	-	98.0			
T.O.P. *			86.0	81.0	85.0	76.0	76.0	83.0	N/A	-	50.0	86.0	-	83.0			

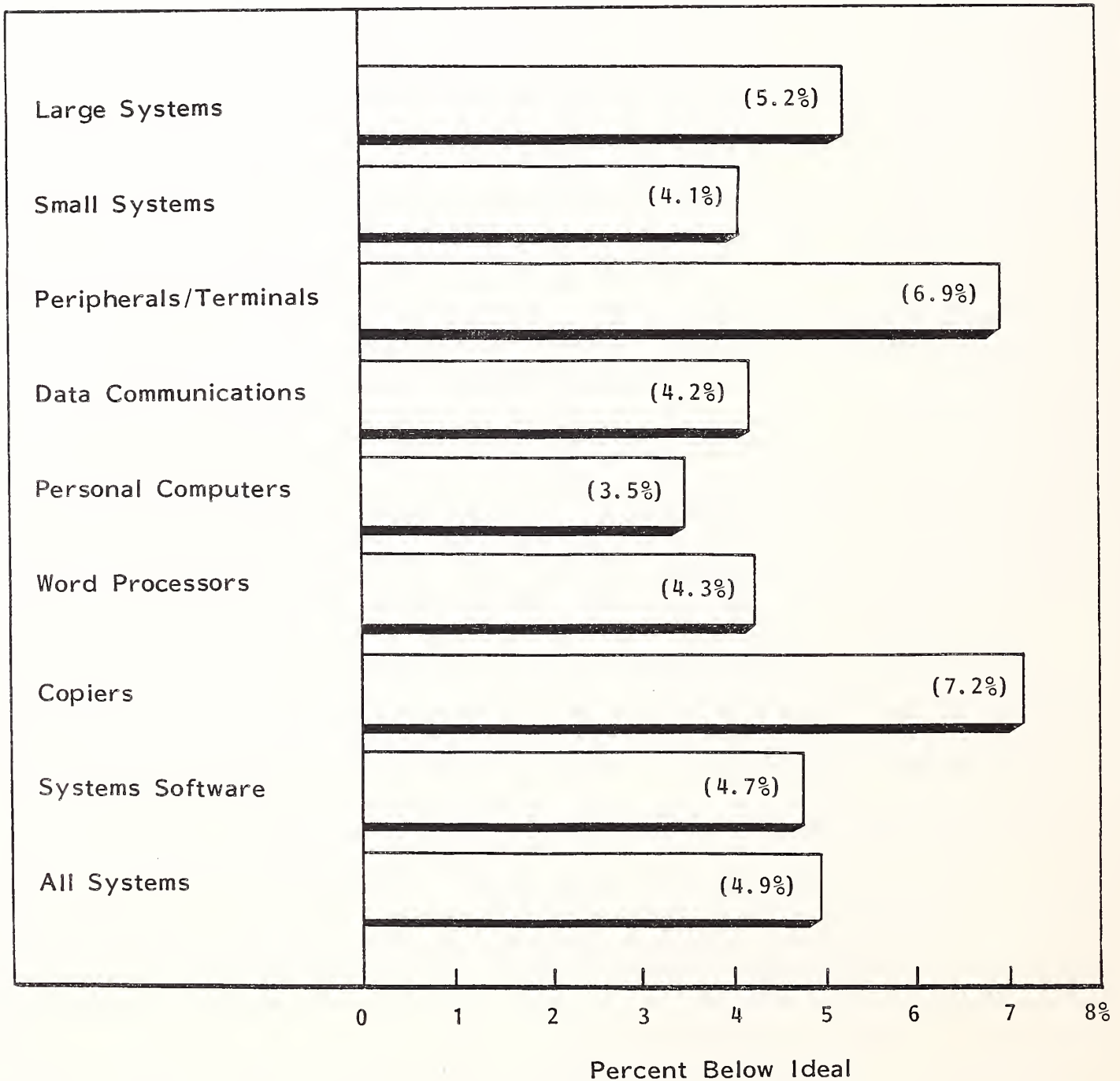
\*T.O.P. = Threshold of Pain (Maximum Time Acceptable to User).

†Percent of Available Time

Source: INPUT Survey.

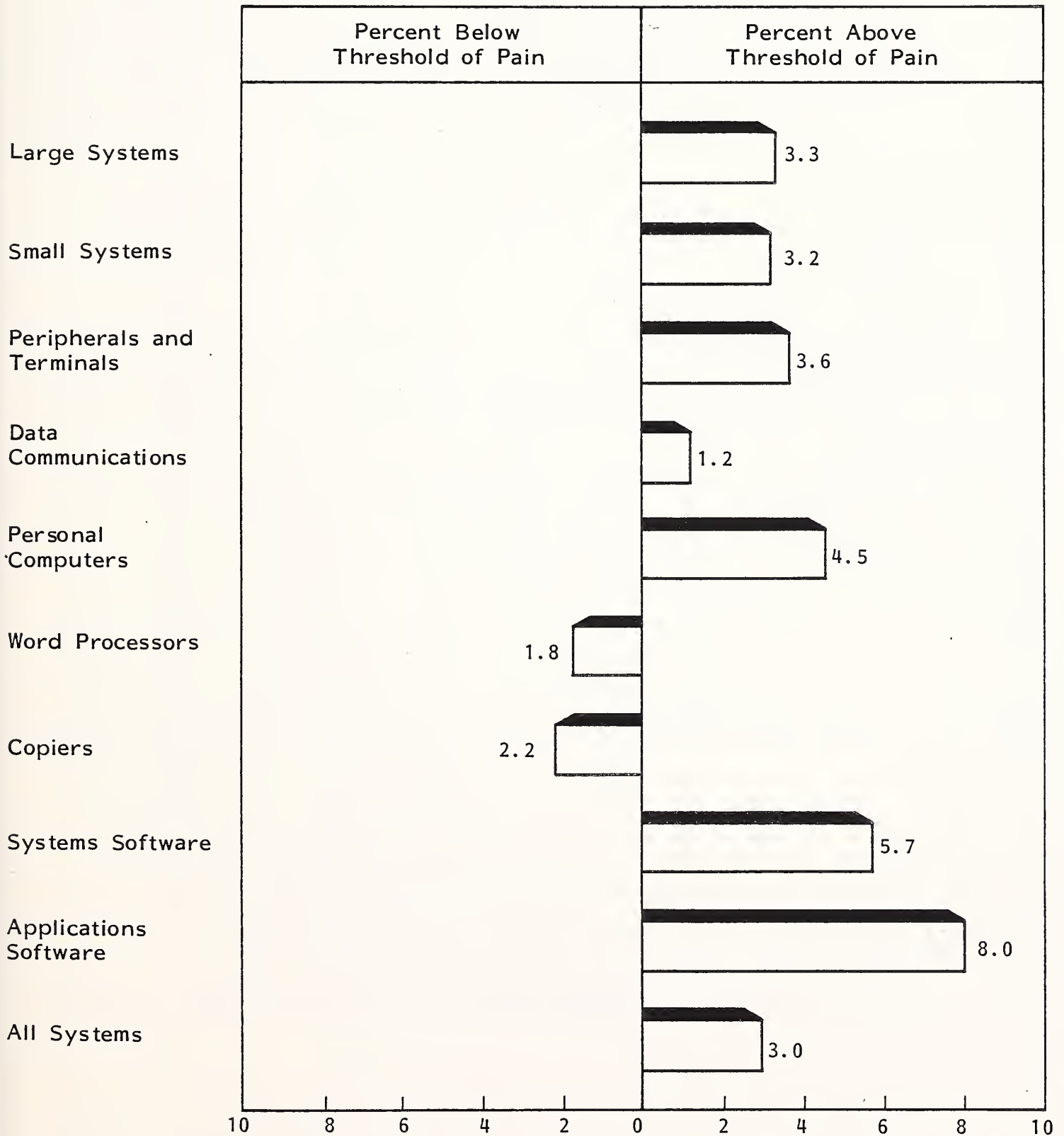
## EXHIBIT V-5

### FRENCH USERS' ACTUAL SYSTEM AVAILABILITY COMPARED TO IDEAL



# EXHIBIT V-6

## FRENCH USERS' ACTUAL SYSTEM AVAILABILITY COMPARED TO "THRESHOLD OF PAIN"



## EXHIBIT V-7

## FRENCH RESPONDENTS' VIEW OF RESPONSE AND REPAIR TIMES, 1985

PRODUCT CLASSIFICATION	RESPONSE TIME (Hours)			REPAIR TIME (Hours)		
	CURRENTLY RECEIVE	IDEAL	T.O.P.*	CURRENTLY RECEIVE	IDEAL	T.O.P.*
<u>Systems</u>						
Large Systems	3.5	2.1	4.5	2.5	1.8	5.1
Small Systems	5.7	2.9	9.2	3.0	2.1	7.1
Peripherals and Terminals	8.4	2.8	8.4	3.0	1.2	4.0
Data Communications	7.6	4.7	9.0	5.6	3.9	5.3
<u>Office Products</u>						
Personal Computers	8.2	10.0	22.3	1.4	1.4	6.6
Word Processors	18.0	10.0	11.3	1.5	1.0	2.5
Workstations	-	-	-	-	-	-
PBX	-	-	-	-	-	-
Copiers	5.4	2.2	6.4	2.6	1.4	4.2
<u>Software</u>						
Systems	5.3	2.0	4.3	3.7	2.3	3.3
Applications	2.0	1.0	1.0	4.0	2.0	2.0
All Systems in France	6.1	3.1	8.2	2.9	1.9	5.7

\*T.O.P. = Threshold of Pain (Maximum Time Acceptable to User).

Source: INPUT Survey.

EXHIBIT V-7 (Cont.)

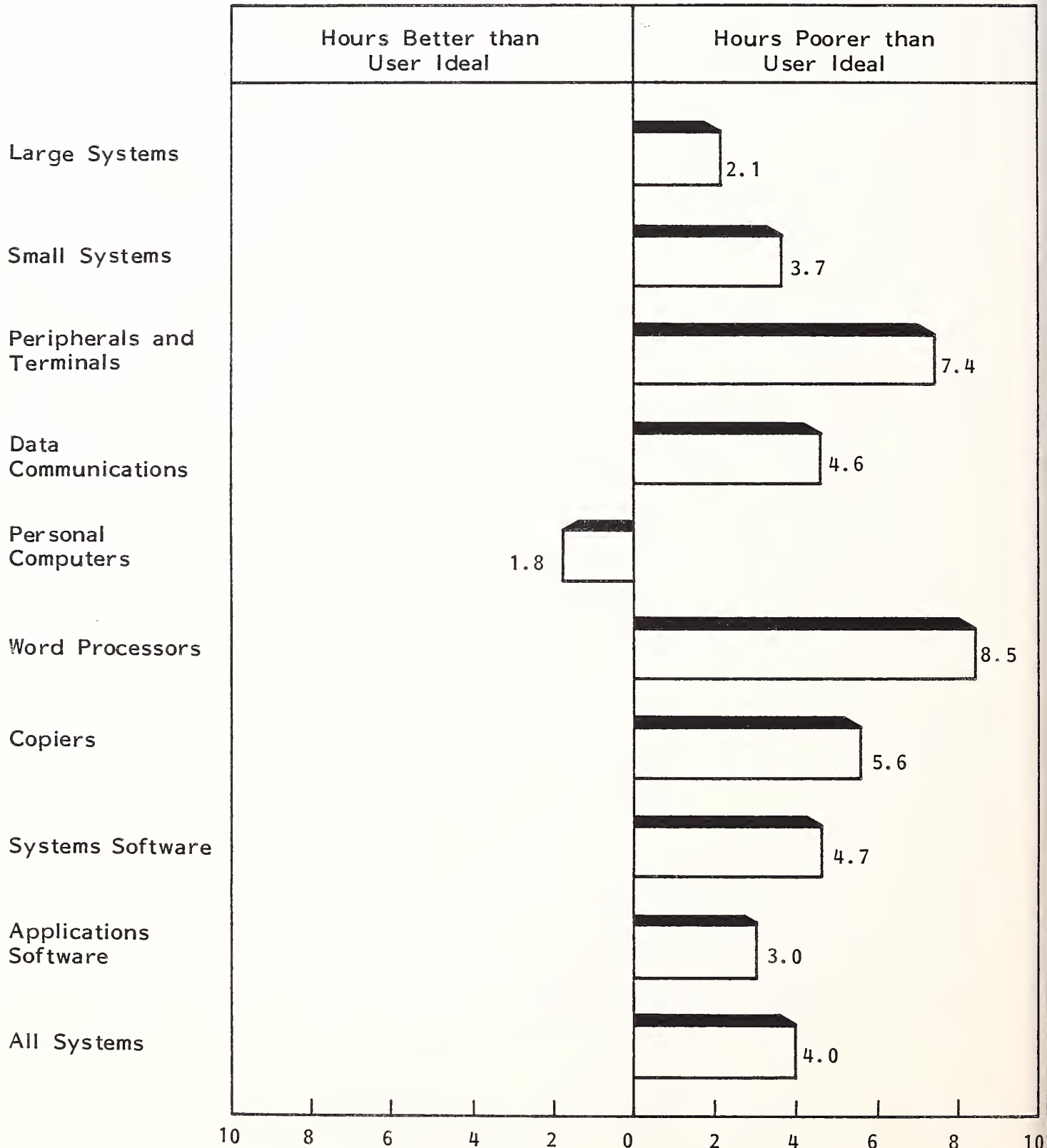
FRENCH RESPONDENTS' VIEW OF RESPONSE AND REPAIR TIMES, 1985

PRODUCT CLASSIFICATION	TOTAL RESPONSE AND REPAIR TIME (Hours)		
	CURRENTLY RECEIVE	IDEAL	T.O.P.*
<u>Systems</u>			
Large Systems	6.0	3.9	9.6
Small Systems	8.7	5.0	16.3
Peripherals and Terminals	11.4	4.0	12.4
Data Communications	13.2	8.6	14.3
<u>Office Products</u>			
Personal Computers	9.6	11.4	28.9
Word Processors	19.5	11.0	13.8
Workstations	-	-	-
PBX	-	-	-
Copiers	8.0	3.6	10.6
<u>Software</u>			
Systems	9.0	4.3	7.6
Applications	6.0	3.0	3.0
All Systems in France	9.0	5.0	13.9

\*T.O.P. = Threshold of Pain (Maximum Time Acceptable to User).

# EXHIBIT V-8

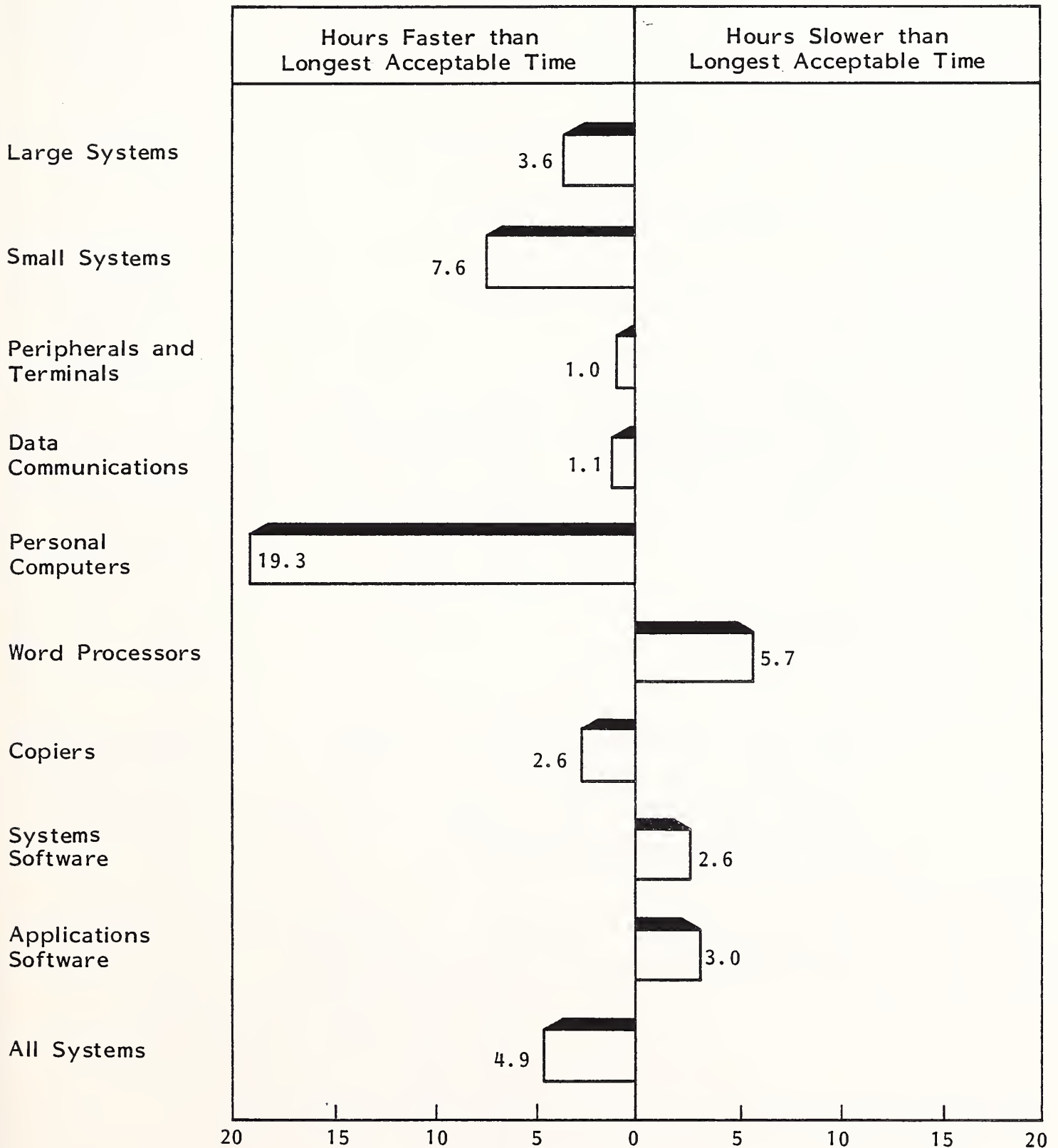
## REPAIR TURNAROUND TIME VARIANCE FROM FRENCH USER IDEAL





# EXHIBIT V-9

## REPAIR TURNAROUND TIME VARIANCE FROM USERS' LONGEST ACCEPTABLE TIMES: FRANCE





## E. SERVICE QUALITY

- There has been little perceived change in service quality in France, as can be seen on Exhibit V-10. Performance generally remains adequate but not exceptional. In terms of overall service quality, the greatest improvements have been in:
  - Large systems--up to 7.9 from 7.6.
  - Applications software--to 7.7 from 6.8.
- On the other hand, both PC and word processor service has deteriorated significantly.
- Exhibit V-11 demonstrates that many of the poorer areas of service performance are in the personnel and administration area rather than in the area of technical competence, a factor which should be addressed by service management.

## F. PRICING ISSUES

- There was a remarkable consistency between user expectations of price increases in 1984 and those delivered by vendors. At around 5%, the price increases were significantly below the rate of inflation, a trend which users expected to be maintained during 1985.
- As Exhibit V-12 shows, however, French users seem prepared to accept rises above the rate of inflation, forecast at 5.9% for 1985.

## FRENCH USERS' QUALITY-OF-SERVICE RATING

PRODUCT SEGMENT	OVERALL QUALITY OF SERVICE			QUALITY OF ENGINEERS			QUALITY OF SERVICE OF MANAGEMENT			AVAILABILITY OF SPARE PARTS			SOFTWARE SUPPORT CAPABILITY		
	1985	1984	1983	1985	1984	1983	1985	1984	1983	1985	1984	1983	1985	1984	1983
All Systems	7.4	7.4	7.7	7.7	7.7	8.0	6.9	7.2	7.0	7.3	7.2	7.4	6.1	6.1	6.1
Large Systems	7.9	7.6	7.6	7.9	8.0	7.9	7.2	7.2	6.9	7.2	7.4	6.7	6.6	6.4	6.2
Small Systems	7.5	7.4	7.4	7.8	7.6	7.4	7.0	7.2	7.2	7.6	7.2	7.2	6.0	6.0	6.1
Peripherals and Terminals	7.1	7.5	7.5	7.3	7.9	7.7	6.4	7.2	7.1	6.9	7.3	7.0	5.7	5.8	5.8
Data Communications	8.0	7.9	7.7	8.2	7.9	8.0	7.0	7.5	7.0	7.5	7.5	7.4	5.7	5.4	6.0
Personal Computers	6.0	7.4	5.5	7.0	7.7	5.5	6.5	7.1	5.0	6.2	6.9	5.3	5.5	5.2	5.7
Word Processors	6.2	6.8	8.1	6.8	7.1	7.9	5.8	6.7	7.4	6.0	6.5	7.6	5.6	6.1	6.5
Workstations	-	7.4	-	-	7.7	-	-	7.8	-	-	7.6	-	-	7.6	-
Copiers	6.4	6.8	7.0	7.6	7.4	7.8	6.8	6.8	6.8	6.8	7.0	6.8	6.0	-	-
PBX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Systems Software	7.6	7.1	9.4	8.5	7.4	9.4	6.6	7.1	7.2	-	-	-	7.1	6.4	6.2
Applications Software	7.7	6.8	6.0	8.0	7.2	7.3	7.5	7.2	6.9	-	-	-	8.5	6.4	6.1

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: INPUT Survey

EXHIBIT V-10 (Cont.)

FRENCH USERS' QUALITY-OF-SERVICE RATING

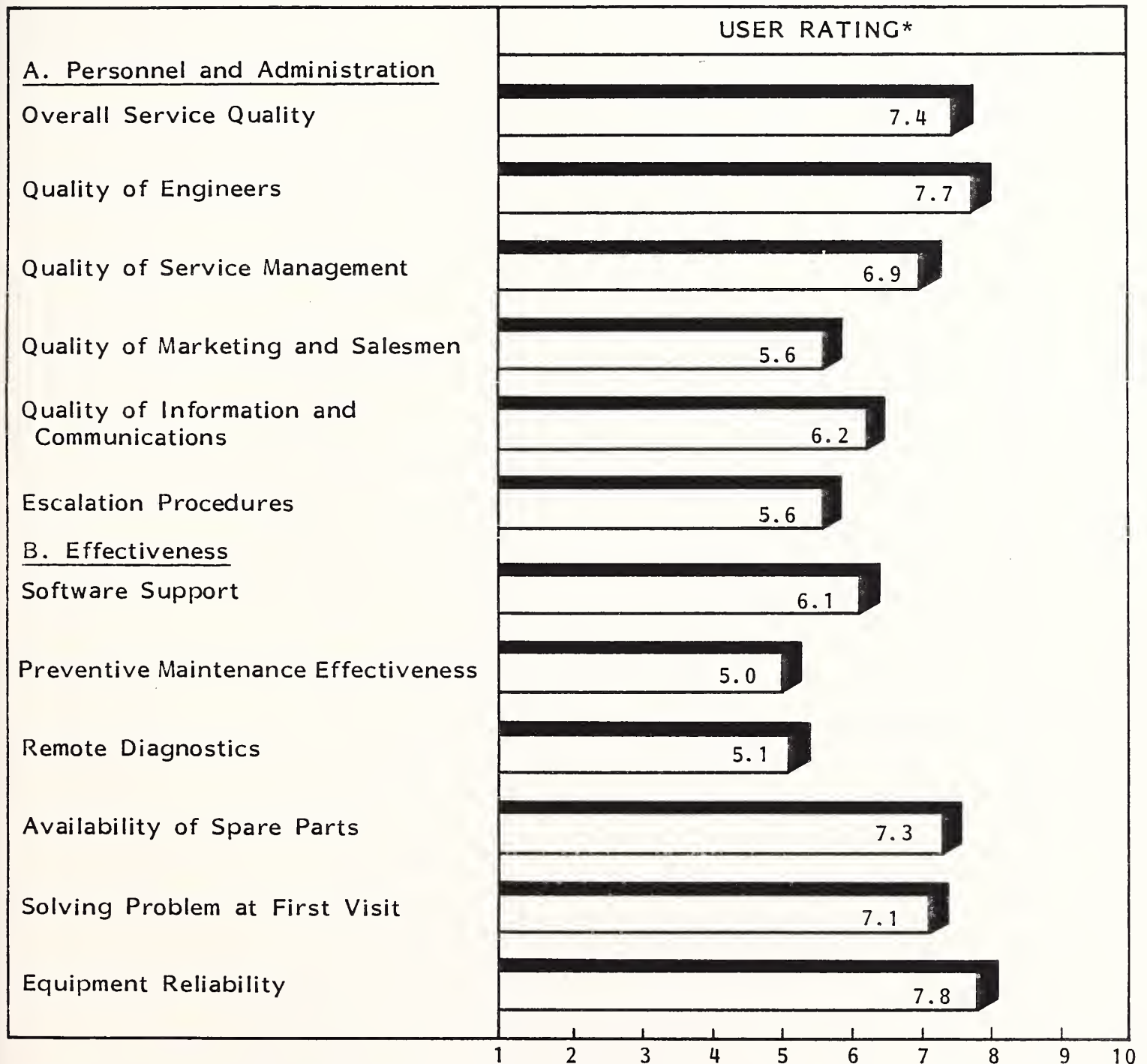
PRODUCT SEGMENT	PREVENTIVE MAINTENANCE EFFECTIVENESS			REMOTE DIAGNOSTICS			QUALITY OF INFORMATION & COMMUNICATIONS			VALUE OF SERVICE COMPARED TO PRICE			ESCALATION OF MARKETING & SALESPEOPLE			PRODUCT RELIABILITY		
	1985	1984	1983	1985	1984	1983	1985	1984	1983	1985	1984	1983	1985	1984	1983	1985	1984	1983
All Systems	5.0	5.2	6.0	5.1	3.6	5.5	6.2	6.4	6.5	6.1	6.4	6.3	5.6	6.3	6.6	7.8	7.9	7.7
Large Systems	5.3	6.4	5.6	5.0	5.0	4.1	6.4	6.6	6.2	6.2	6.4	5.9	6.4	6.3	6.0	8.2	8.2	8.1
Small Systems	5.9	5.1	5.3	6.3	3.8	5.3	6.3	6.4	6.3	6.1	6.3	5.9	5.4	6.4	6.2	7.9	7.9	7.5
Peripherals and Terminals	3.7	5.0	5.9	4.7	3.0	4.6	5.9	6.1	6.2	6.0	6.4	6.0	5.8	6.2	6.4	7.6	7.9	7.8
Datacommunications	2.4	7.1	5.8	5.0	6.6	5.6	6.6	8.1	7.1	7.1	5.8	7.0	6.3	6.4	7.0	8.2	8.5	8.3
Personal Computers	4.8	5.9	3.0	4.0	-	1.0	4.9	6.9	4.0	5.8	4.9	6.3	4.5	5.9	5.3	7.1	7.9	7.0
Word Processors	3.7	5.6	5.9	2.0	-	5.3	5.0	5.7	6.4	4.8	5.0	6.5	4.3	6.3	5.5	7.2	7.7	8.3
Workstations	-	6.3	-	-	3.5	-	-	6.0	-	-	5.6	-	-	5.2	-	-	7.6	-
Copiers	4.8	5.9	6.5	4.0	2.5	7.0	6.2	7.0	6.3	5.0	4.8	5.6	4.7	6.8	6.6	7.4	6.6	6.0
Systems Software	4.7	-	-	4.2	6.6	9.1	5.3	6.6	7.3	6.4	5.3	7.8	4.3	6.4	8.9	7.9	7.9	-
Applications Software	8.0	7.4	6.3	8.0	7.2	6.0	7.7	6.7	6.1	6.0	5.3	6.3	2.0	7.1	6.3	7.0	6.8	6.7

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: INPUT Survey

# EXHIBIT V-11

## SUMMARY OF FRENCH USER RATING OF SERVICE QUALITY



\*Rating: 1 = Poor, 5 = Average, 10 = Excellent.

Source: INPUT User Survey.



EXHIBIT V-12

FRENCH RESPONDENTS' VIEW OF MAINTENANCE PRICING INCREASES

	Systemst						Office Productst				Softwaret		
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Personal Computers	Word Processors	Workstations	PBX	Copiers	Systems	Applications	All Systems in France	
<u>1985</u>													
Received 1984	5.7	5.8	5.1	4.9	4.3	5.0	-	-	5.4	4.9	5.3	5.3	
Expected 1985	5.6	5.6	1.8	4.8	4.5	5.0	-	-	5.4	4.9	4.8	4.4	
T.O.P. * 1985	7.9	7.3	7.0	6.4	8.3	9.0	-	-	6.4	5.0	5.5	7.2	
<u>1984</u>													
Received 1983	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Expected 1984	5.6	6.3	6.0	6.9	6.7	6.8	8.3	0.0	6.2	6.6	6.7	6.3	
T.O.P. * 1984	7.7	8.0	7.1	7.7	7.6	6.3	10.1	8.0	5.9	7.0	6.7	7.3	
<u>1983</u>													
Received 1982	8.0	8.0	7.0	6.0	N/A	7.0	N/A	N/A	N/A	11.0	6.0	9.0	
Expected 1983	8.0	9.0	7.0	7.0	N/A	8.0	N/A	N/A	N/A	12.0	7.0	8.0	
T.O.P. * 1983	9.0	9.0	8.0	8.0	N/A	8.0	N/A	N/A	N/A	12.0	9.0	8.0	

\*T.O.P. = Threshold of Pain (Maximum Time Acceptable to User).

+Percent Price Increase

Source: INPUT Survey.

- Exhibit V-13 shows that a significant number of users are prepared to pay a premium for improved service, particularly for up-time guarantees. The exceptions are, generally, PCs and word processors where users are reluctant to pay premium prices.
- As Exhibit V-14 shows, the level of premium can be very significant--almost 10% for guaranteed up-time on large systems and almost 20% for a guaranteed response time for data communications equipment.

# EXHIBIT V-13

## PERCENTAGE OF FRENCH RESPONDENTS WHO ARE WILLING TO PAY FOR IMPROVED SERVICE

	Up-Time Guarantee	Response Time Guarantee	Software Turnaround	Software Consulting	Software Enhancement	Personalized Service
Large Systems	61.8%	52.9%	44.1%	50.0%	44.1%	47.1%
Small Systems	62.5	33.3	37.5	41.7	41.7	37.5
Peripherals and Terminals	57.1	40.0	34.3	40.0	37.1	42.9
Data Communications	50.0	50.0	42.9	42.9	42.9	42.9
Personal Computers	27.8	27.8	22.2	22.2	22.2	22.2
Word Processors	30.0	30.0	30.0	30.0	30.0	30.0
Copiers	50.0	50.0	50.0	50.0	50.0	50.0
Systems Software	29.4	35.3	35.3	29.4	35.3	23.5
Applications Software	25.0	37.5	37.5	37.5	37.5	37.5



# EXHIBIT V-14

## PERCENTAGE ABOVE BASE THAT FRENCH RESPONDENTS WOULD BE WILLING TO PAY FOR EXTRA/IMPROVED SERVICE

	Up-Time Guarantee	Response Time Guarantee	Software Turnaround	Software Consulting	Software Enhancement	Personalized Service
Large Systems	9.6%	12.3%	3.7%	5.1%	3.5%	13.6%
Small Systems	9.5	14.7	2.3	5.3	6.8	6.8
Peripherals and Terminals	7.0	7.3	3.5	5.6	4.2	7.1
Data Communications	7.9	19.3	1.7	3.3	1.7	6.7
Personal Computers	8.0	14.0	3.8	10.0	3.8	6.3
Word Processors	3.3	11.7	5.0	6.7	5.0	1.7
Copiers	1.3	6.3	0.5	1.3	2.5	2.5
Systems Software	1.0	4.2	2.5	2.0	2.5	0.0
Applications Software	2.5	6.7	3.3	3.3	3.3	0.0
All Systems	7.4	11.0	3.0	4.9	3.9	7.2



VI UNITED KINGDOM



## VI UNITED KINGDOM

### A. INTRODUCTION

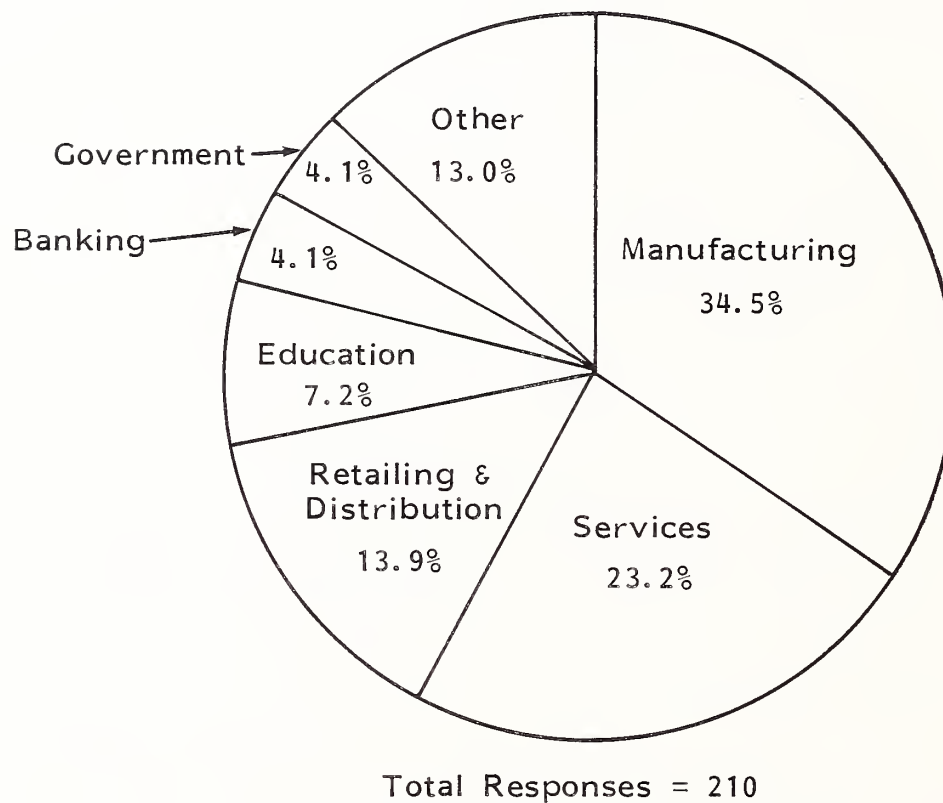
- The data presented in this section is based on responses received from 210 users.
- The responses come from a variety of industries, primarily manufacturing and service, as shown in Exhibit VI-1. The employee analysis of the sample, both total employees and the number of employees involved in data processing, are shown on Exhibit VI-2.
- The data processing budgets of respondents are spread over a wide range, as can be seen in Exhibit VI-3.
- The manufacturers of the equipment used by respondents is shown on Exhibit VI-4.

### B. IMPORTANCE OF SERVICE FACTORS

- Users were asked to rank 11 service elements in order of importance. The results of this analysis are shown in Exhibit VI-5 and on a product-by-product basis in Exhibit VI-6.

EXHIBIT VI-1

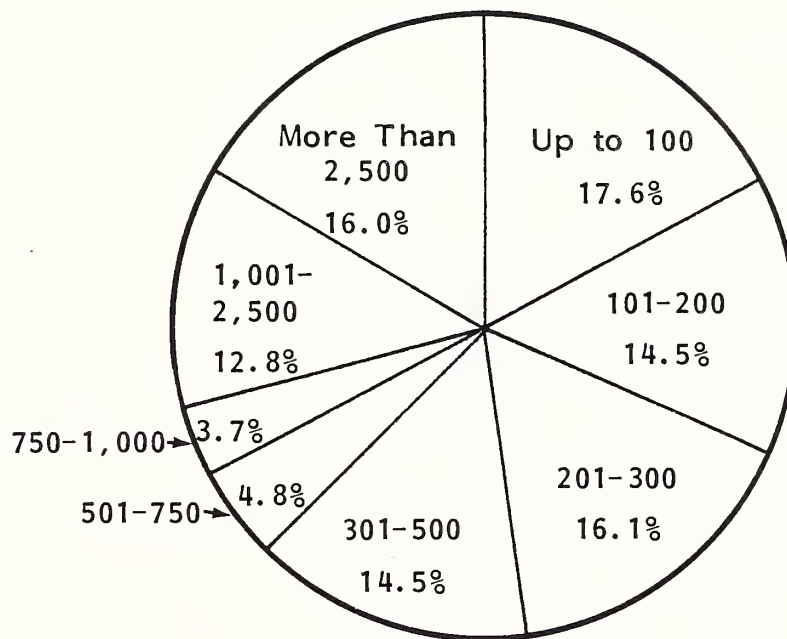
PROFILE OF USERS BY INDUSTRY SECTOR  
UNITED KINGDOM



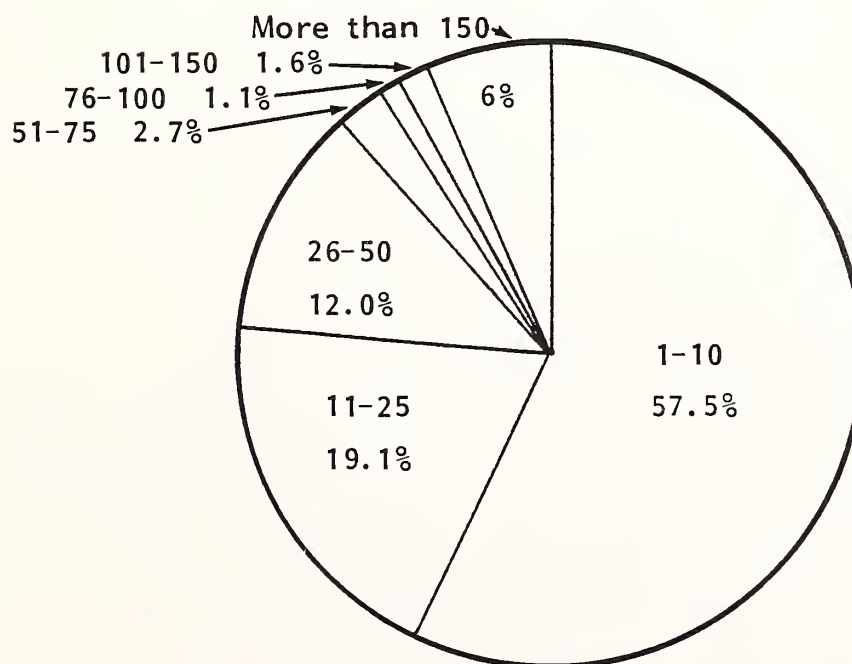
Source: INPUT 1985 User Survey

# EXHIBIT VI-2

## UNITED KINGDOM RESPONDENTS: ANALYSIS BY NUMBER OF EMPLOYEES



All Employees



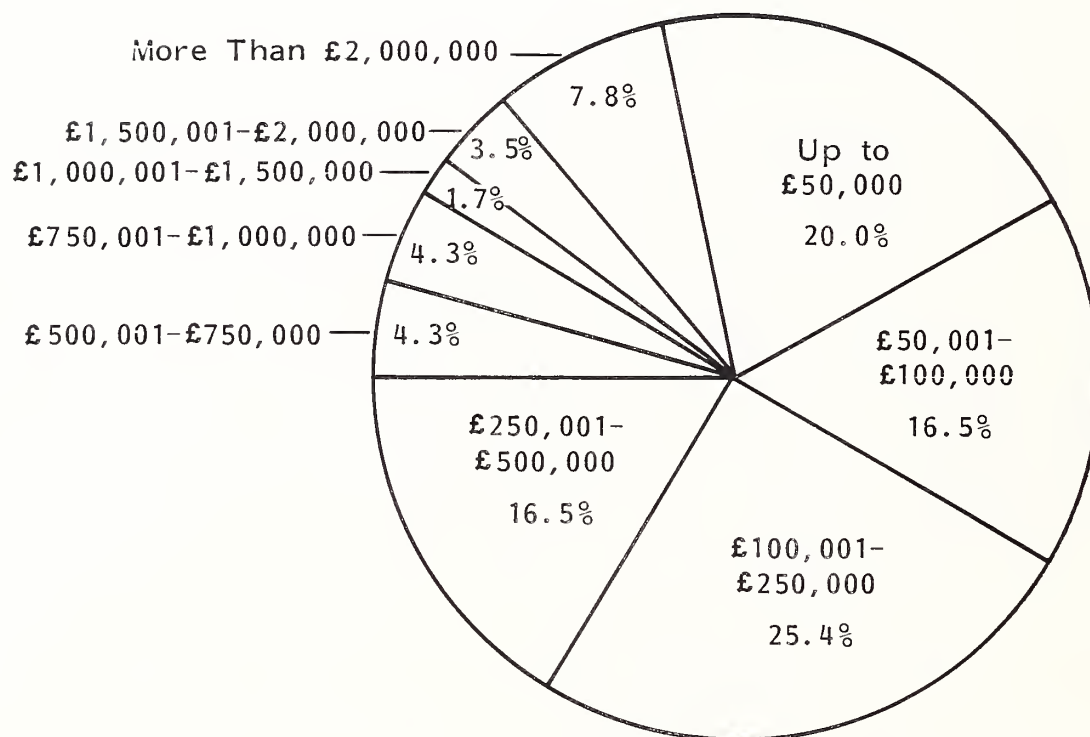
DP Employees

Number of Responses: 210



EXHIBIT VI-3

UNITED KINGDOM RESPONDENTS' SIZE OF TOTAL DP BUDGET  
(Percent of Respondents)

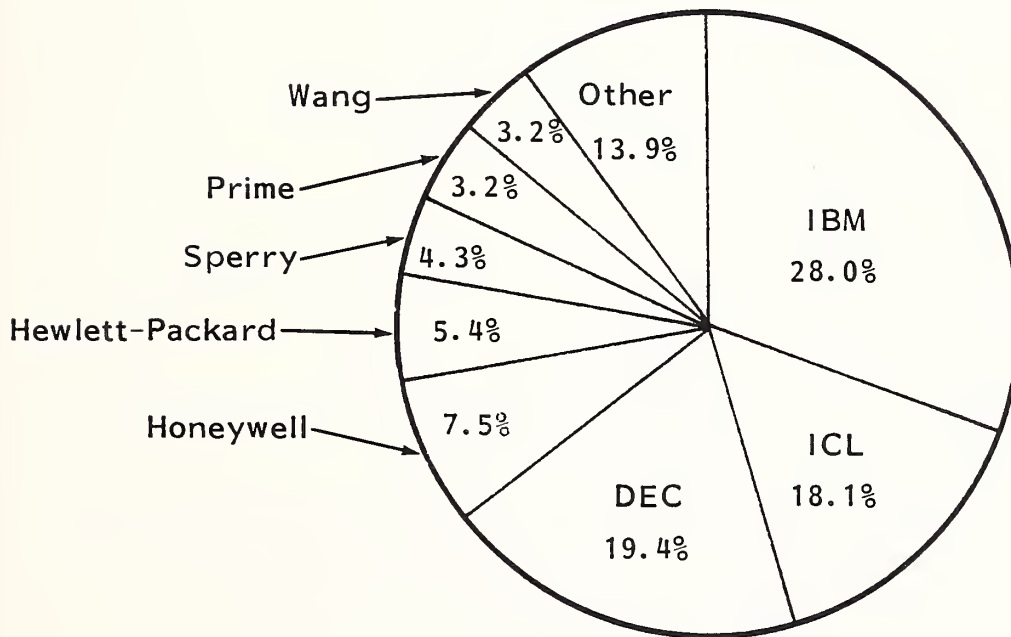


Total Number of Respondents: 210

Source: INPUT 1985 User Survey

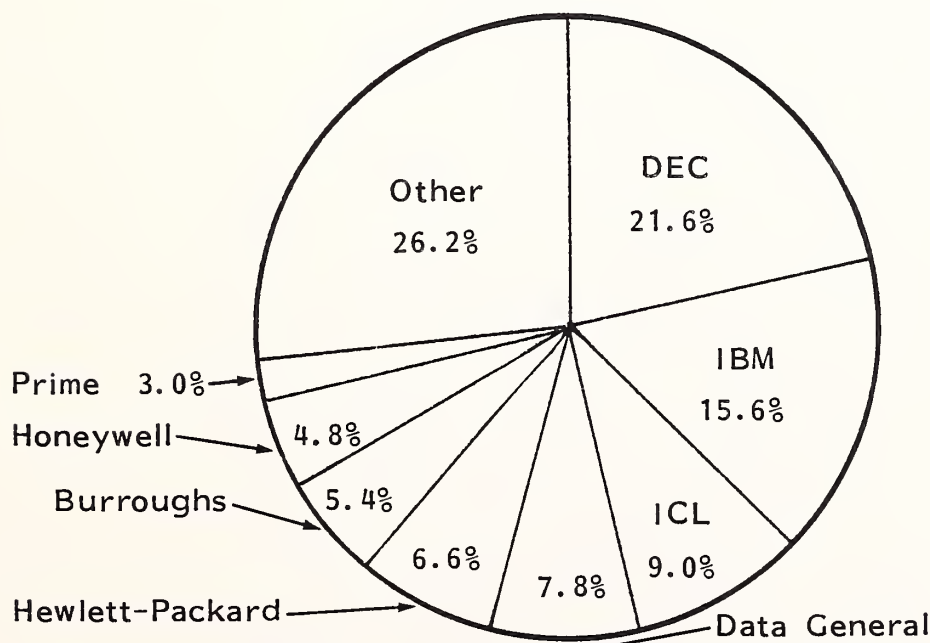
EXHIBIT VI-4

UNITED KINGDOM RESPONDENTS' INSTALLED EQUIPMENT  
(Percent Using)



Large Systems

Sample Size: 94



Small Systems

Sample Size: 167

# EXHIBIT VI-4 (Cont.)

## UNITED KINGDOM RESPONDENTS' INSTALLED EQUIPMENT (Percent Using)

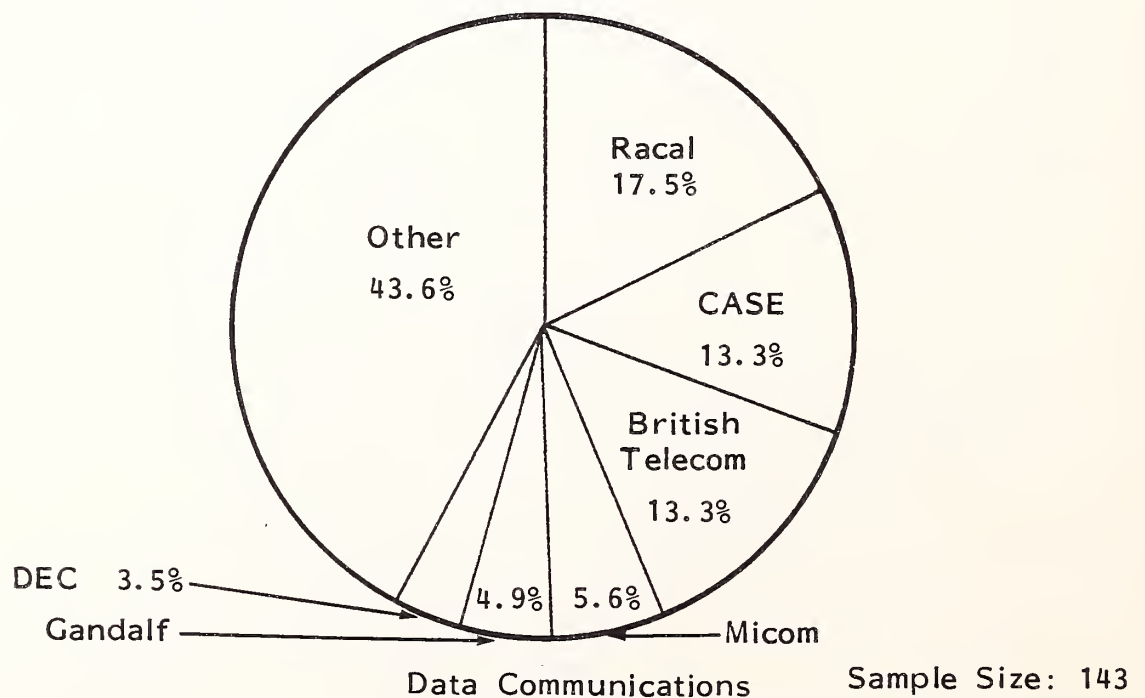
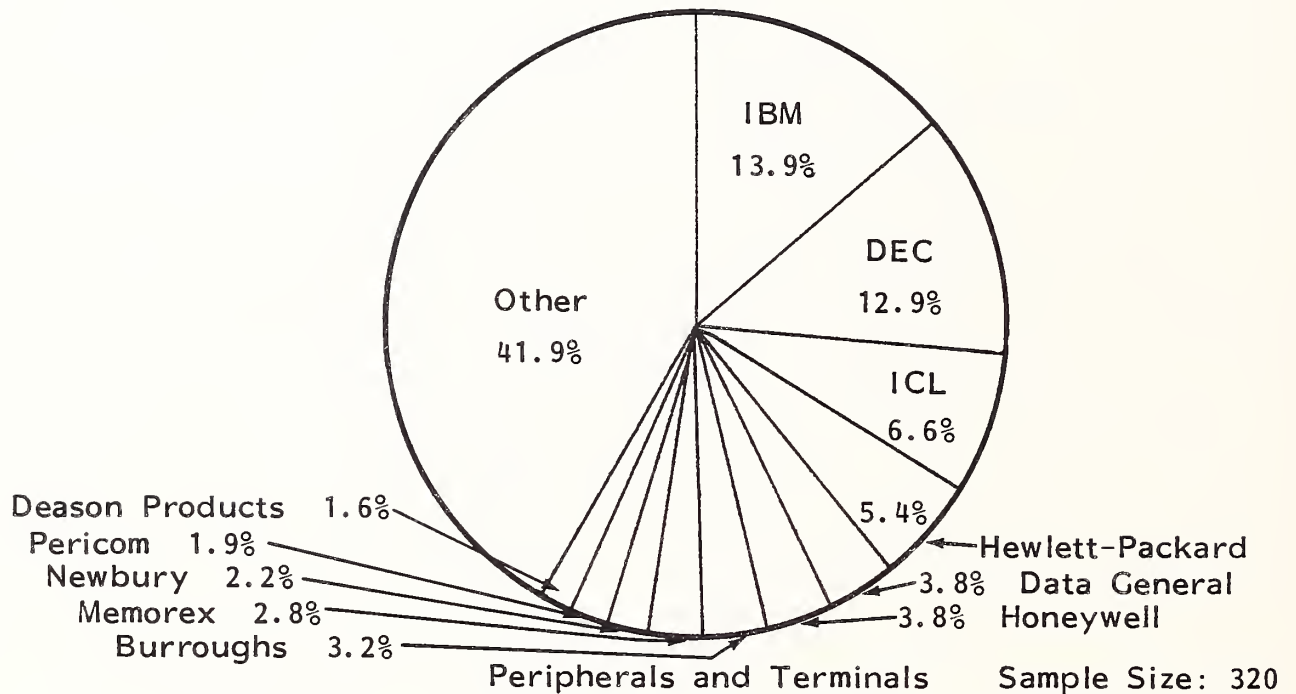


EXHIBIT VI-4 (Cont.)

UNITED KINGDOM RESPONDENTS' INSTALLED EQUIPMENT  
(Percent Using)

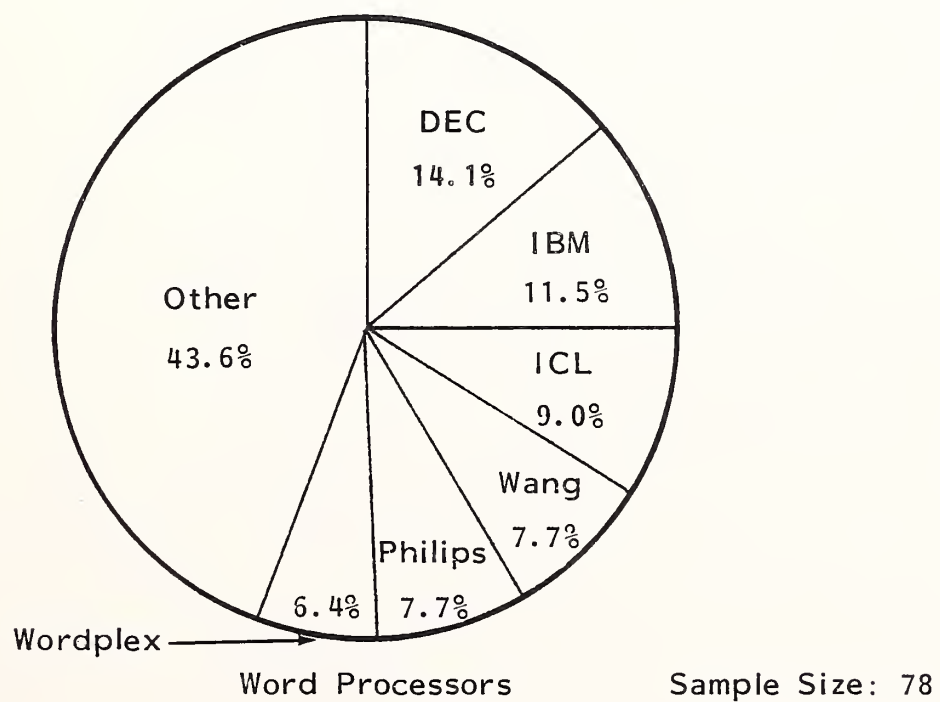
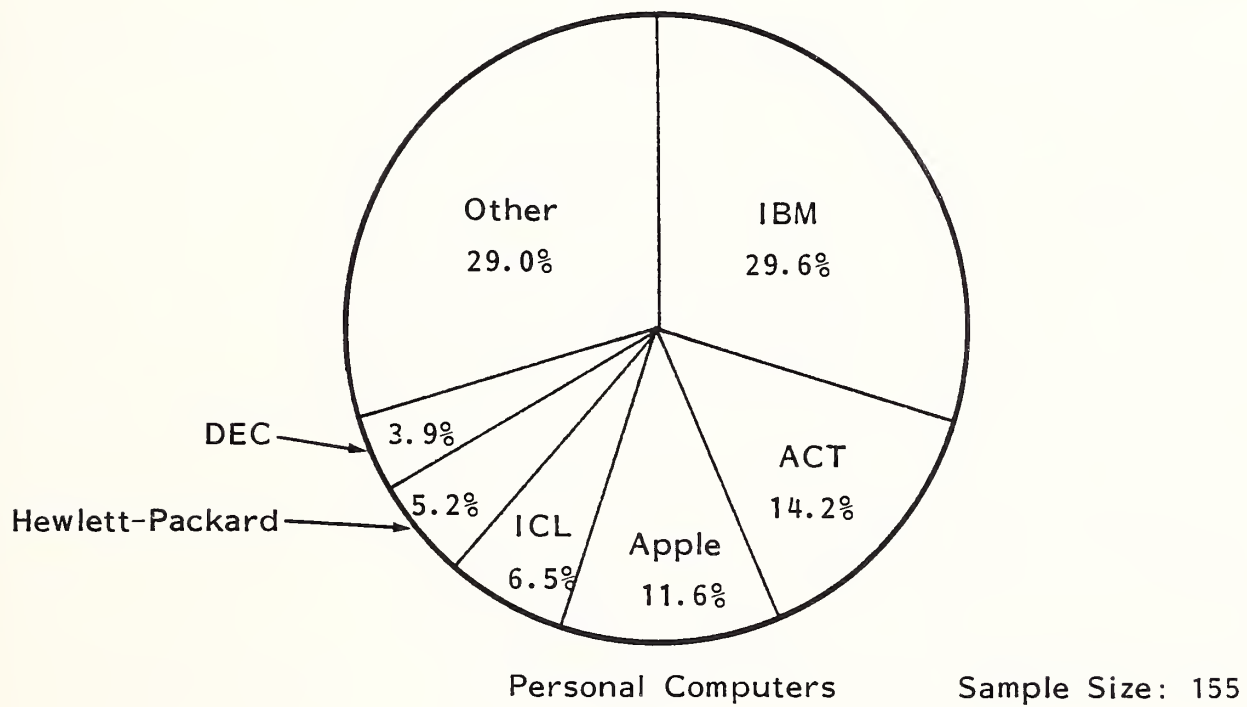
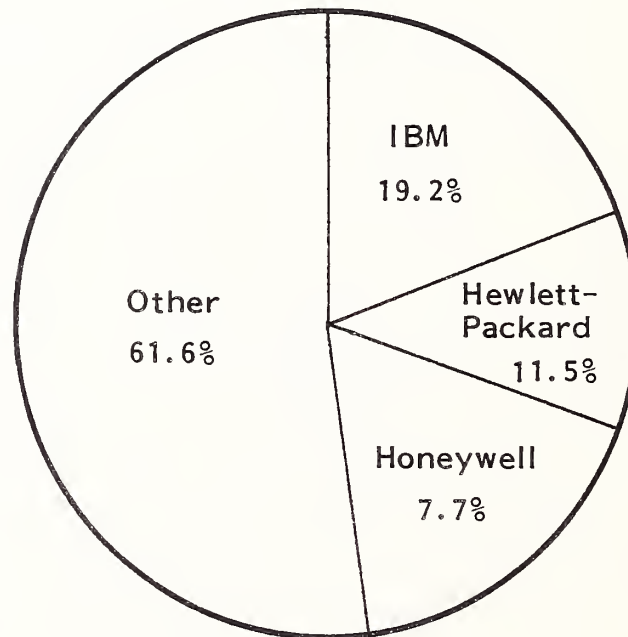


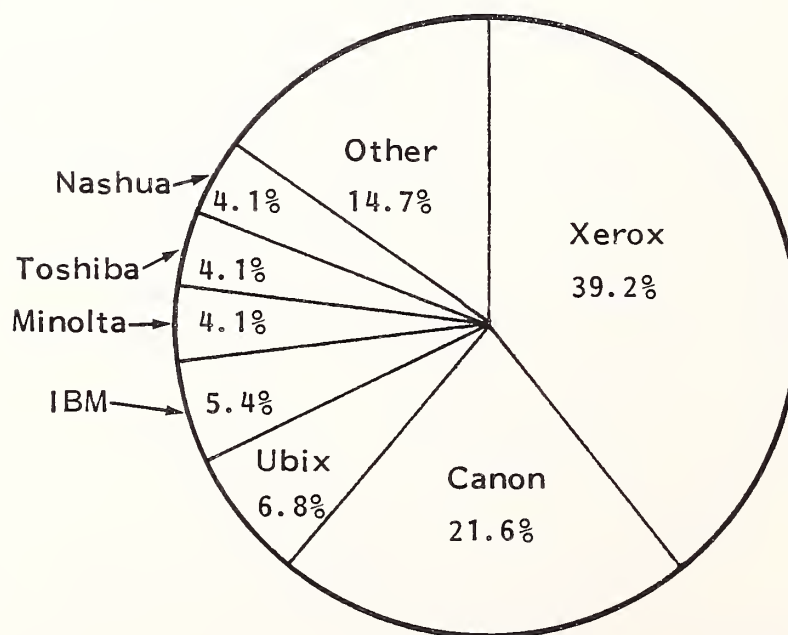
EXHIBIT VI-4 (Cont.)

UNITED KINGDOM RESPONDENTS' INSTALLED EQUIPMENT  
(Percent Using)



Workstations

Sample Size: 26

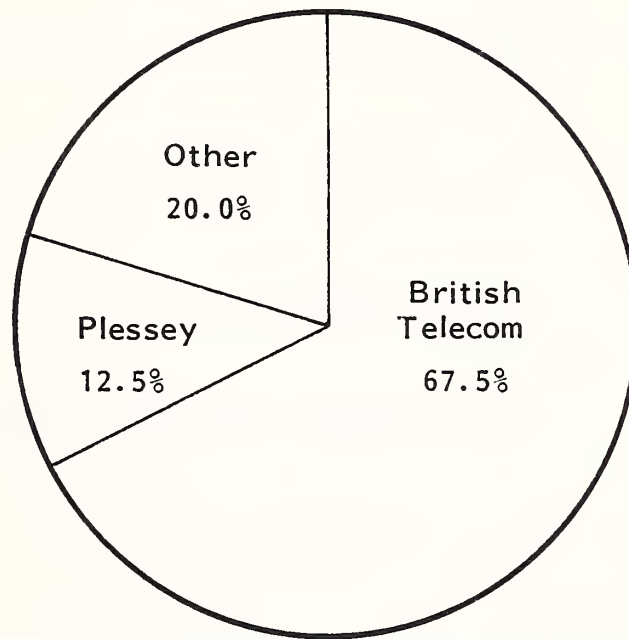


Copiers

Sample Size: 74

EXHIBIT VI-4 (Cont.)

UNITED KINGDOM RESPONDENTS' INSTALLED EQUIPMENT  
(Percent Using)



PBX

Sample Size: 40

RELATIVE IMPORTANCE OF SERVICE FACTORS: UNITED KINGDOM  
(Average Ranking)





## IMPORTANCE OF SERVICE FACTORS: UNITED KINGDOM USERS' RANKING BY PRODUCT

	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Personal Computers	Word Processors	Workstations	Copiers	PBX	All Hardware	Systems Software	Applications Software	All Products
System Availability	1	1	2	1	1	2	2	1	1	1	1	1	1
Reliability	2	2	1	2	2	1	1	2	2	3	3	3	2
Response Time	3	3	3	3	3	3	3	3	3	2	2	2	3
Repair Time	4	4	4	4	4	4	4	4	4	5	5	5	4
Software Maintenance	5	5	6	7	5	5	5	-	7	4	4	4	6
Price	6	6	5	5	6	7	7	5	5	6	6	6	5
Up-Time Guarantees	7	8	8	6	7	6	7	7	6	7	7	7	7
Preventive Maintenance	8	7	7	8	8	8	6	6	8	10	10	8	8
Same Engineer Back Call	9	9	9	9	9	9	8	8	9	8	9	9	9
Remote Diagnostics	10	10	11	10	11	10	10	10	10	9	8	8	10
Choice of Service	11	11	10	11	10	11	9	9	11	11	11	11	11

Rating: 1 = Most Important, 10 = Least Important

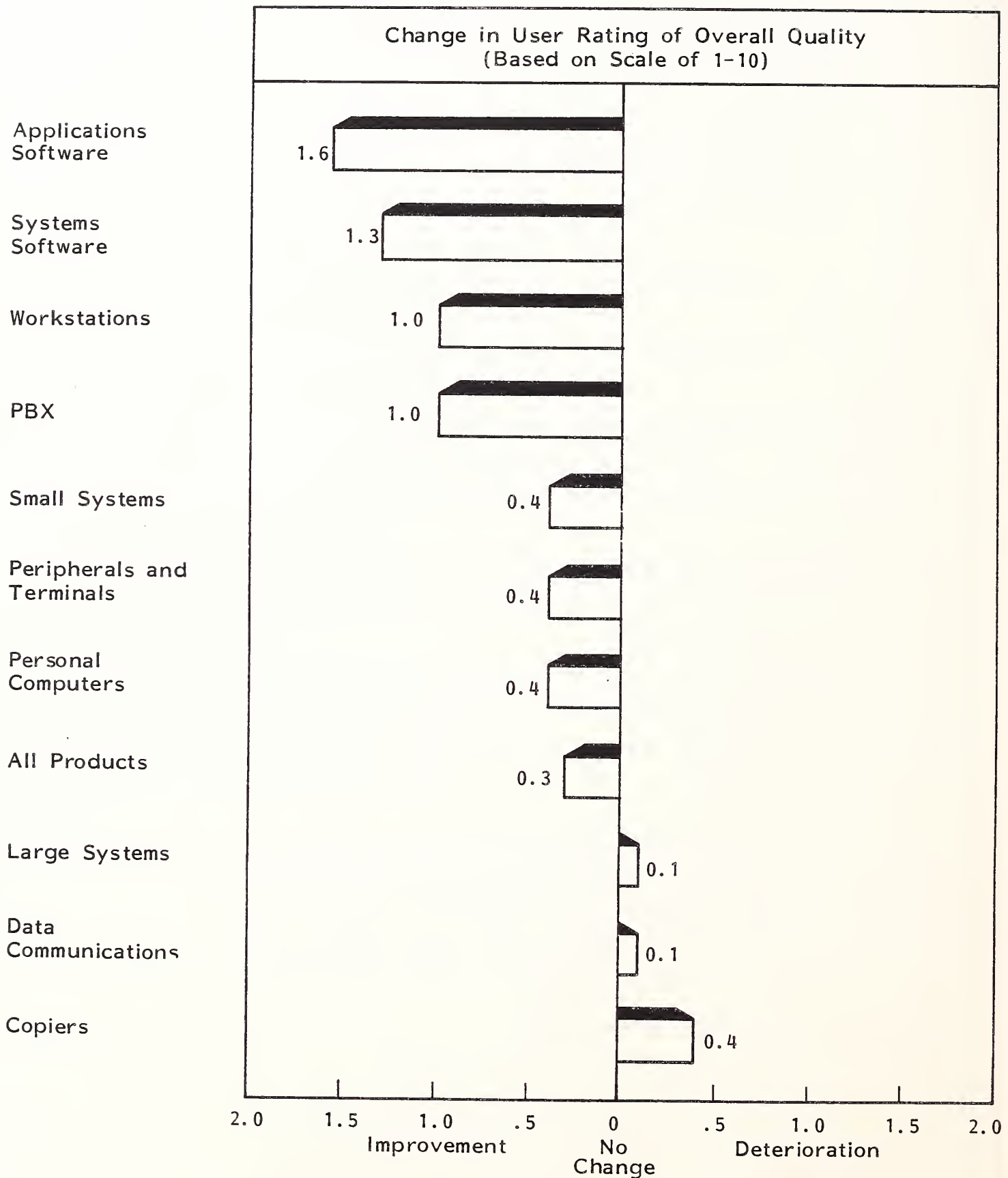
- Clearly, from this analysis the most important factors to users continue to be:
  - Reliability.
  - System availability.
  - Response time.
  - Repair time.
  - Price.
  - Software maintenance.
- There are, of course, a number of differences between the various products, but little significant variance in the top four elements. Interestingly, for software products, response time is rated as more important than reliability.
- The area which should give most cause for concern is the low importance users attach to preventive maintenance and remote diagnostics.
  - With increasing hardware reliability, preventive maintenance programs can be an effective method of 'showing the flag'; in other words, showing the user that he is receiving value for money with a regular engineer's attendance.
  - The increasing cost of a service call (\$212 in 1984), plus the high level of abortive calls either through inability to complete the repair or inability to find the fault, makes remote diagnosis increasingly important in reducing overall costs.

## C. SERVICE QUALITY

- 1985 has proved to be a reasonably good year for service quality, with user responses indicating a slight improvement over 1984, rising from 7.2 on a 1-10 scale to 7.5.
- Within that overall improvement, exceptionally good progress was made in a number of produce areas, as shown in Exhibit VI-7. The particularly striking successes are in:
  - Workstations.
  - PBX equipment.
  - Systems software.
  - Applications software.
- The only declining areas are in:
  - Large systems.
  - Data communications equipment.
  - Copiers.
- Most individual service elements showed an improvement, but two vitally important factors showed significant progress:
  - Product reliability.
  - Value compared to price.

# EXHIBIT VI-7

## CHANGE IN OVERALL SERVICE QUALITY, 1984-1985



- The improvement in reliability is doubly important, once because of its importance to users and again because of the potential impact that improved reliability will have on the customer service function.
- A few areas have shown a deterioration, however:
  - Availability of parts.
  - Software support capability (strange, given the high user satisfaction with the quality of software support).
  - Preventive maintenance effectiveness.
- Within each product group, there are a number of areas of improvement and deterioration in service quality.
  - Large systems service quality has deteriorated in a number of areas-- quality of service, management, availability of parts, software support capability, preventive maintenance effectiveness, remote diagnostics, and even, albeit marginally, product reliability. Despite this general degradation, the user perception of value for money shows an improvement.
  - Small systems service quality has improved in most areas: quality of engineers, quality of service management, product reliability, and value for money.
  - Service for peripherals and terminals shows general improvements, particularly for parts availability, remote diagnostics, quality of information and communication, product reliability, and value for money. The only serious problem area is the effectiveness of preventive maintenance.

- Data communications equipment service shows several areas where performance has deteriorated significantly--parts availability, software support capability, remote diagnostics, quality of information and communications, and product reliability. Preventive maintenance, by contrast, shows an improvement, although is still not rated very highly.
  - Software support for personal computers shows a marked degradation, as does the quality of communications. To offset this, there have been improvements in preventive maintenance effectiveness, the provision of remote diagnostics (although still poor), and the value of money.
  - Word processor service also has problems with software support and the quality of information, but reliability is now extremely high and the value for money has improved steadily.
  - Most service elements have deteriorated in copier service--quality of engineers, quality of service management, availability of parts, PM effectiveness, quality of information and communications, and product reliability. Not surprisingly, value for money has also deteriorated.
  - Both systems and applications software service have registered significant improvements in service quality in every service element.
- Exhibit VI-8 shows the detailed position for each product, while Exhibits VI-9 and VI-10 illustrate the relative quality of service for each product and the relative quality of each service element.
  - The service performance by key manufacturers is summarised on Exhibit VI-11 and the detailed analysis is shown on Exhibit VI-12.
  - The service quality provided by most manufacturers is good, rating well above average. The only vendor rating below average is Canon, for copiers and word processors.



## UNITED KINGDOM USERS' QUALITY-OF-SERVICE RATING

PRODUCT SEGMENT	OVERALL QUALITY OF SERVICE			QUALITY OF ENGINEERS			QUALITY OF SERVICE MANAGEMENT			AVAILABILITY OF SPARE PARTS			SOFTWARE SUPPORT CAPABILITY		
	1985	1984	1983	1985	1984	1983	1985	1984	1983	1985	1984	1983	1985	1984	1983
All Systems	7.5	7.2		7.6	7.3	7.1	6.9	6.7	6.4	7.0	7.3	6.6	6.1	6.2	6.1
Large Systems	7.6	7.7	6.8	7.9	7.8	7.1	6.8	7.0	6.4	6.7	7.1	6.4	6.0	6.5	6.1
Small Systems	7.8	7.4	7.1	7.9	7.5	7.3	7.2	6.8	6.4	7.1	7.3	6.4	6.0	5.9	6.0
Peripherals and Terminals	7.7	7.3	7.1	7.7	7.5	7.3	7.0	6.8	6.5	7.1	6.7	7.0	6.0	5.9	6.1
Data Communications	7.4	7.5	7.1	7.5	7.4	7.2	6.7	7.0	6.5	6.9	7.7	6.9	5.4	6.6	6.0
Personal Computers	7.2	6.8	6.3	6.8	6.9	6.3	6.5	6.3	6.0	6.8	6.9	5.9	5.3	6.2	5.4
Word Processors	7.0	7.0	6.7	7.0	6.9	6.6	6.6	6.7	6.0	7.0	7.0	6.3	5.9	6.3	5.7
Workstations	7.9	6.9	-	8.8	6.9	-	7.4	6.1	-	6.8	6.5	-	5.8	6.0	-
Copiers	6.4	6.8	6.6	6.7	7.1	6.4	5.9	6.8	6.1	5.9	9.5	6.6	-	-	-
PBX	7.7	6.7	6.6	7.8	6.6	6.6	7.2	6.1	6.6	7.4	7.3	6.9	7.3	4.7	6.4
Systems Software	8.1	6.8	6.7	7.8	6.9	7.0	7.4	6.3	6.4	-	-	-	7.1	6.6	6.3
Applications Software	7.8	6.2	6.2	7.8	6.4	7.0	7.5	6.2	6.2	-	-	-	7.3	6.2	6.4

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: INPUT Survey



# EXHIBIT VI-8 (Cont.)

## UNITED KINGDOM USERS' QUALITY-OF-SERVICE RATING

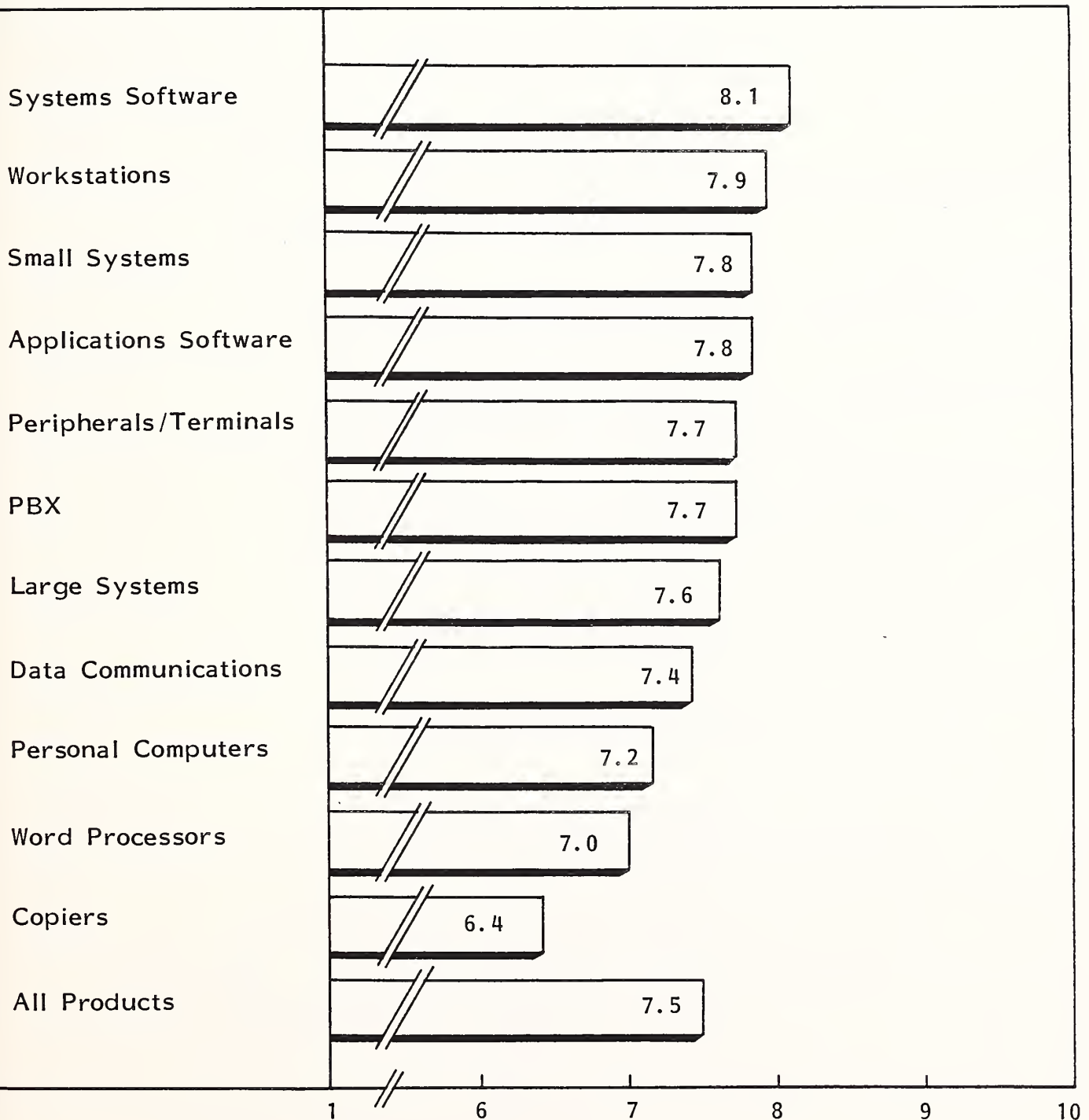
PRODUCT SEGMENT	PREVENTIVE MAINTENANCE EFFECTIVENESS			REMOTE DIAGNOSTICS			QUALITY OF INFORMATION & COMMUNICATIONS			VALUE OF SERVICE COMPARED TO PRICE			PRODUCT RELIABILITY		
	1985	1984	1983	1985	1984	1983	1985	1984	1983	1985	1984	1983	1985	1984	1983
All Systems	6.2	6.3	6.0	4.8	4.6	5.1	6.1	6.0	5.8	6.9	6.2	5.9	8.3	7.9	7.7
Large Systems	6.4	7.1	6.2	5.2	5.8	5.0	6.3	6.3	5.8	6.7	6.2	5.8	8.1	8.2	7.6
Small Systems	6.4	6.4	6.1	4.3	4.3	5.0	5.9	5.6	5.9	6.9	6.2	5.7	8.3	8.0	7.6
Peripherals and Terminals	6.0	6.3	6.1	4.5	4.1	4.8	6.4	5.8	5.8	7.1	6.2	5.9	9.0	7.8	7.7
Data Communications	5.7	5.2	6.0	4.8	5.3	6.0	5.9	6.3	5.8	6.9	7.0	6.5	8.1	8.6	8.1
Personal Computers	6.4	5.9	6.0	4.5	3.4	4.4	5.7	6.5	5.5	6.9	6.2	6.3	8.0	7.6	7.6
Word Processors	5.9	6.3	5.2	4.2	4.4	4.2	5.4	6.2	5.4	6.7	6.0	5.9	9.0	7.2	7.6
Workstations	6.4	5.4	-	5.7	3.4	-	7.6	5.4	-	6.8	6.3	-	8.6	7.7	-
Copiers	5.3	6.2	5.5	3.6	3.4	3.2	4.6	6.0	5.6	6.0	6.1	6.0	6.2	6.5	6.2
PBX	6.5	5.4	5.4	5.7	5.0	4.3	7.0	4.9	5.6	7.4	5.5	5.9	7.9	7.5	7.0
Systems Software	7.7	5.4	5.9	6.5	5.0	5.4	7.0	6.0	5.9	7.2	5.9	5.7	8.3	7.9	7.6
Applications Software	7.5	4.6	5.6	6.3	4.8	5.7	7.2	5.8	5.6	7.3	6.1	5.8	7.7	7.2	7.3

Rating: 1 = Poor, 5 = Average, 10 = Excellent

Source: INPUT Survey

## EXHIBIT VI-9

### OVERALL QUALITY OF SERVICE - PRODUCTS



User Rating of Service Quality  
(1 = Low, 5 = Average, 10 = Good)

EXHIBIT VI-10

OVERALL QUALITY OF SERVICE - SERVICE ELEMENTS

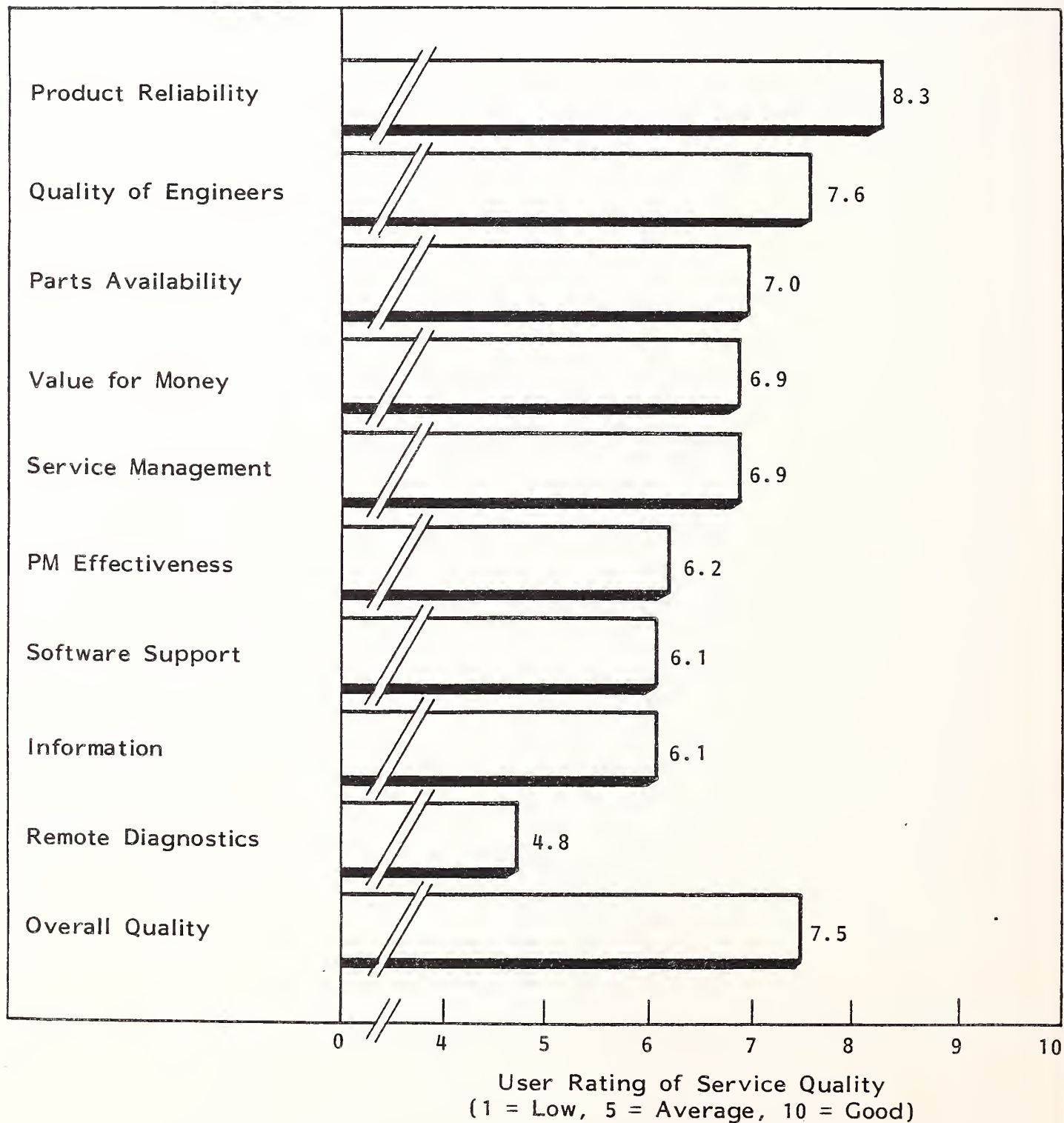
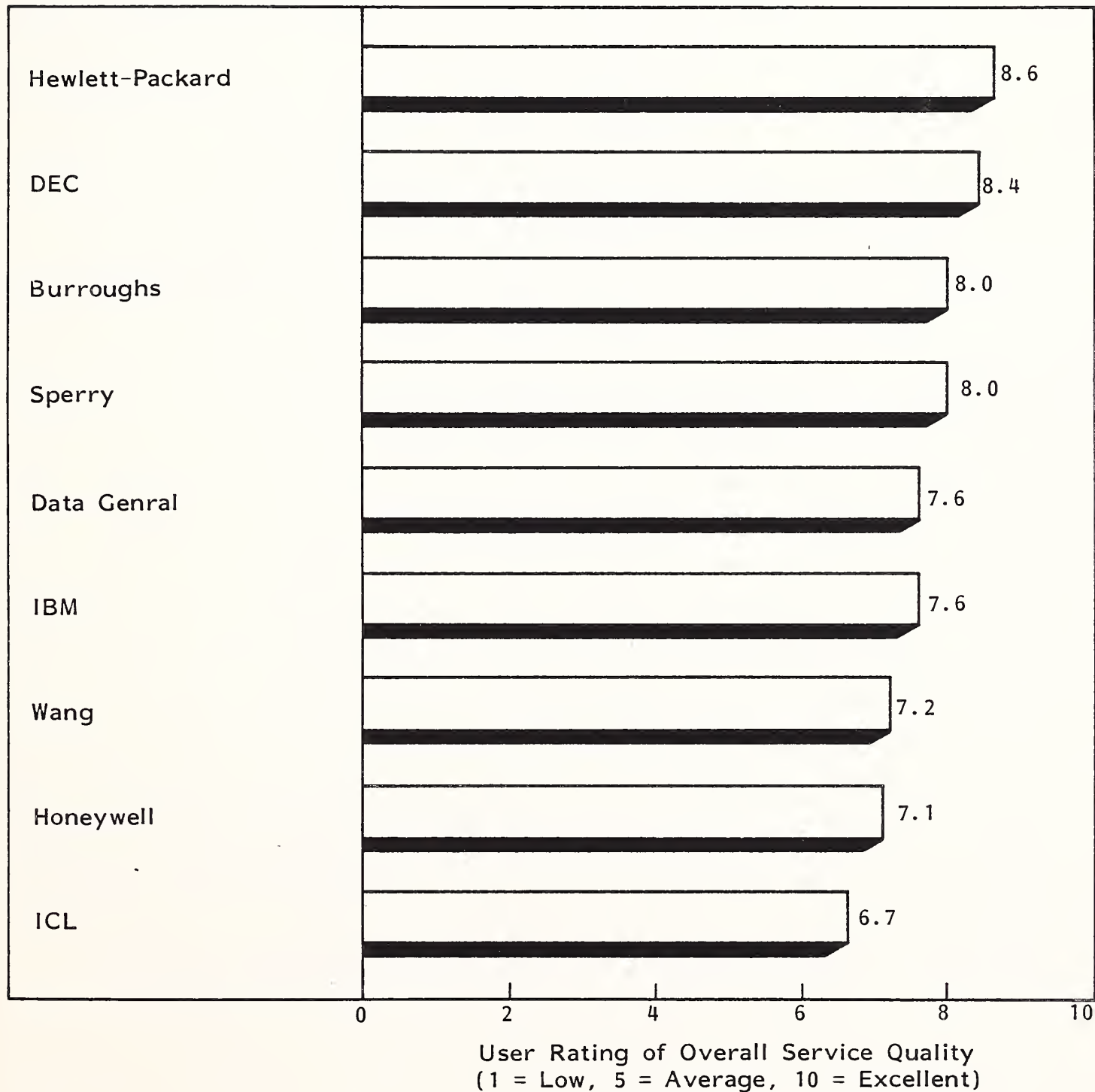


EXHIBIT VI-11

VENDOR PERFORMANCE RATING



## EXHIBIT VI-12

## UNITED KINGDOM USER RATINGS OF OVERALL VENDOR QUALITY

VENDOR	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Personal Computers	Word Processors	Workstations	PBX	Copiers	Systems Software	All Products
ACT	-	-	-	-	7.4	-	-	-	-	-	7.6
Apple	-	-	-	-	7.1	-	-	-	-	-	7.3
British Telecom	-	-	-	8.2	-	-	-	7.4	-	-	7.7
Burroughs	-	8.4	8.1	-	-	-	-	-	-	-	8.0
CASE	-	-	-	7.6	-	-	-	-	-	-	7.6
Canon	-	-	-	-	-	-	-	-	5.5	-	5.7
DEC	8.6	8.3	8.5	-	-	6.8	-	-	-	8.9	8.4
Data General	-	7.8	-	-	-	-	-	-	-	-	7.6
Hewlett-Packard	9.2	8.6	8.5	-	-	-	-	-	-	8.8	8.6
Honeywell	7.1	7.4	7.2	-	-	-	-	-	-	-	7.1
IBM	7.3	8.5	7.8	-	6.7	8.4	-	-	-	8.4	7.6
ICL	6.6	7.3	7.2	-	6.9	6.5	-	-	-	-	6.7
Memorex	-	-	9.0	-	-	-	-	-	-	-	9.0

Rating: 1= Poor, 5 = Average, 10 = Excellent

Source: INPUT User Survey



EXHIBIT VI-12 (Cont.)

UNITED KINGDOM USER RATINGS OF OVERALL VENDOR QUALITY

VENDOR	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Personal Computers	Word Processors	Workstations	PBX	Copiers	Systems Software	All Products
Newbury	-	-	6.0	-	-	-	-	-	-	-	6.0
Pericom	-	-	-	-	-	-	-	-	-	-	7.6
Philips	-	-	-	-	-	-	-	-	-	-	8.0
Prime	-	7.8	-	-	-	-	-	-	-	8.0	8.1
Racal	-	-	-	7.8	-	-	-	-	-	-	7.8
Sperry	-	-	-	-	-	-	-	-	-	-	8.0
Toshiba	-	-	-	-	-	-	-	-	8.5	-	8.5
Wang	-	-	-	-	-	-	-	-	-	-	7.2
Xerox	-	7.0	-	-	-	-	-	-	6.4	-	6.4
Average All Vendors	7.6	7.8	7.7	7.4	7.2	7.0	7.9	7.4	6.4	8.1	7.5

Rating: 1= Poor, 5 = Average, 10 = Excellent

Source: INPUT User Survey

- The highest quality services comes from:
  - Memorex.
  - Hewlett Packard.
  - DEC.
  - Toshiba.
  - Prime.
  - Burroughs.
- All the above vendors obtained a rating of 8 or over from users. Exhibit VI-11 and VI-12 give a summary and detailed picture of the ratings.
- Compared to 1984, many manufacturers have improved their service quality.
  - Apple (PCs up to 7.1 from 6.4).
  - British Telecom (data communications equipment up to 8.2 from 7.2).
  - Burroughs (major improvements across all products).
  - Data General (small systems up to 7.8 from 7.3).
  - DEC (improvements in large systems, peripherals, terminals, and PCs).
  - Hewlett-Packard (significant improvements in all products).
  - Honeywell (improved across all products).



- IBM (improved in small systems, 7.7 to 8.5; word processors, 7.4 to 8.4).
  - ICL (PCs, 5.5 to 6.9).
  - Minolta (copiers up to 8.5 from 7.3).
  - Philips (small systems to 8.0 from 7.4 and word processors to 8.0 from 7.3).
  - Prime (large systems, 8.7 from 8.0).
- On the negative side, several vendors are showing a deterioration in performance compared to 1984.
    - IBM (large systems down from 8.2 to 7.3).
    - ICL (large systems down from 7.4 to 6.6, small systems from 8.5 to 7.3, word processors down to 6.5 from 7.3).
    - Prime (small systems down from 9.0 to 7.8).

#### D. SYSTEM AVAILABILITY

- Overall system availability showed a significant increase from 93.7% in 1984 to 95.4% in 1985. This improvement, however, does not meet the user ideal, as can be seen in Exhibit VI-13 through VI-15.
- It is clear from Exhibit VI-3 that those products whose performance is furthest from the user ideal are:

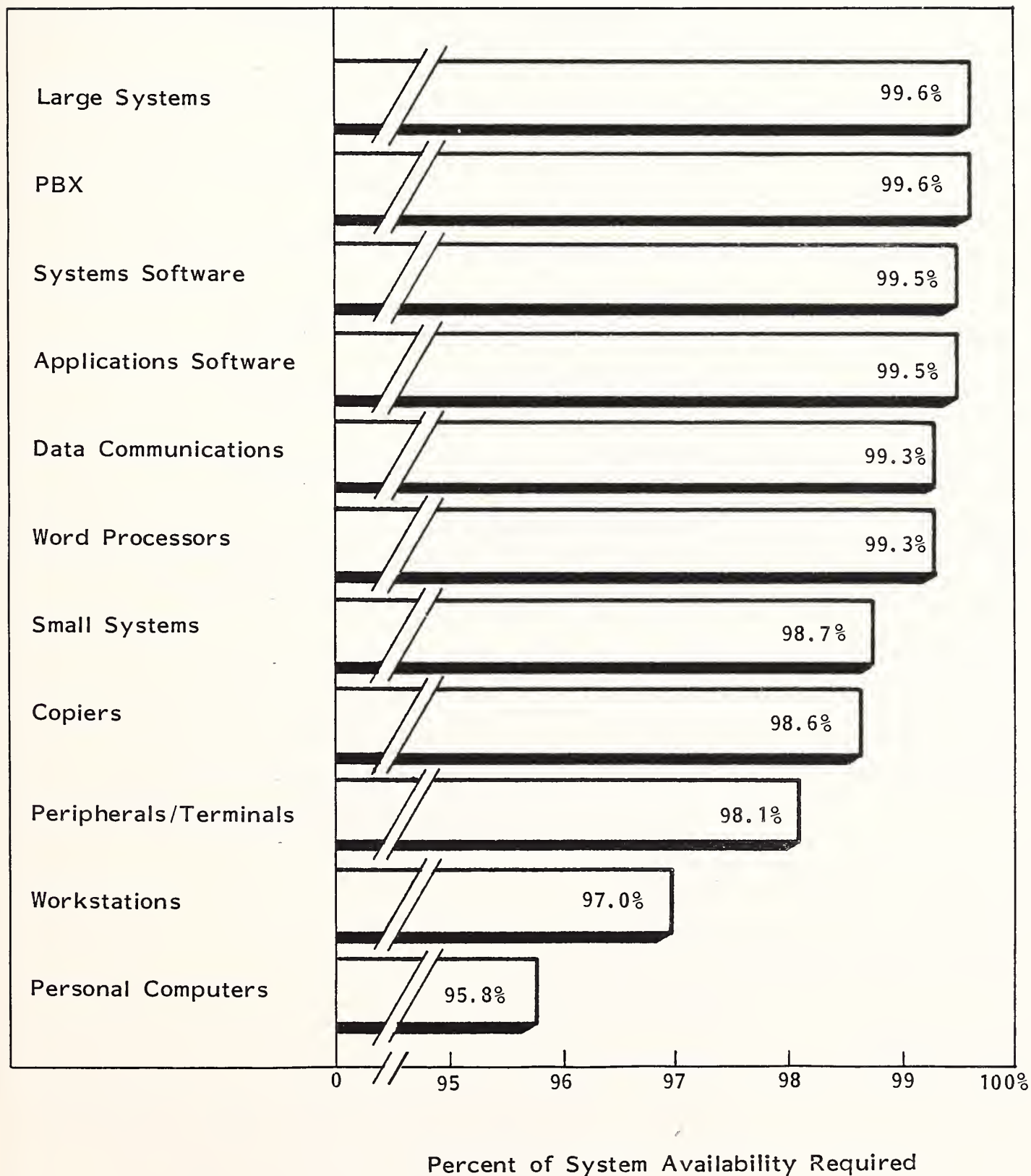
# EXHIBIT VI-13

## UNITED KINGDOM RESPONDENTS' VIEW OF SYSTEM AVAILABILITY

LEVELS OF SYSTEM AVAILABILITY				Systemst						Office Automation Productst						Software†		
				Small Systems			Peripherals and Terminals			Data Communications			Personal Computers			Word Processors		
				Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Personal Computers	Word Processors	Workstations	PBX	Copiers	Average All Hardware†	System	Application	Average All Systems†		
<u>1985</u>																		
Current	97.3%	95.4%	94.7%	97.4%	92.6%	95.3%	96.4%	98.3%	89.9%	95.2%	98.2%	97.3%	95.4%					
Ideal	99.6	98.7	98.1	99.3	95.8	99.3	97.0	99.6	98.6	98.4	99.5	99.5	98.5					
T.O.P.*	96.2	91.9	92.7	95.5	91.0	93.1	92.1	97.3	90.9	93.1	96.2	95.0	93.4					
<u>1984</u>																		
Current	96.5	93.3	93.6	96.4	89.7	93.1	93.5	97.4	84.4	93.6	94.6	93.2	93.7					
Ideal	96.9	93.4	94.0	96.1	90.1	94.3	96.6	98.4	90.9	94.3	96.2	97.2	94.6					
T.O.P.*	93.4	89.3	90.4	94.2	86.4	90.8	89.9	97.0	88.5	91.0	93.5	94.7	91.3					
<u>1983</u>																		
Current	93.4	93.3	94.2	95.8	94.8	93.0	N/A	96.3	91.9	N/A	94.6	91.6	94.0					
Ideal	98.7	97.6	98.4	99.4	98.3	97.0	N/A	99.4	99.1	N/A	98.9	99.1	98.4					
T.O.P.*	93.3	90.7	91.5	94.6	91.0	89.5	N/A	94.5	89.1	N/A	93.1	93.1	91.9					

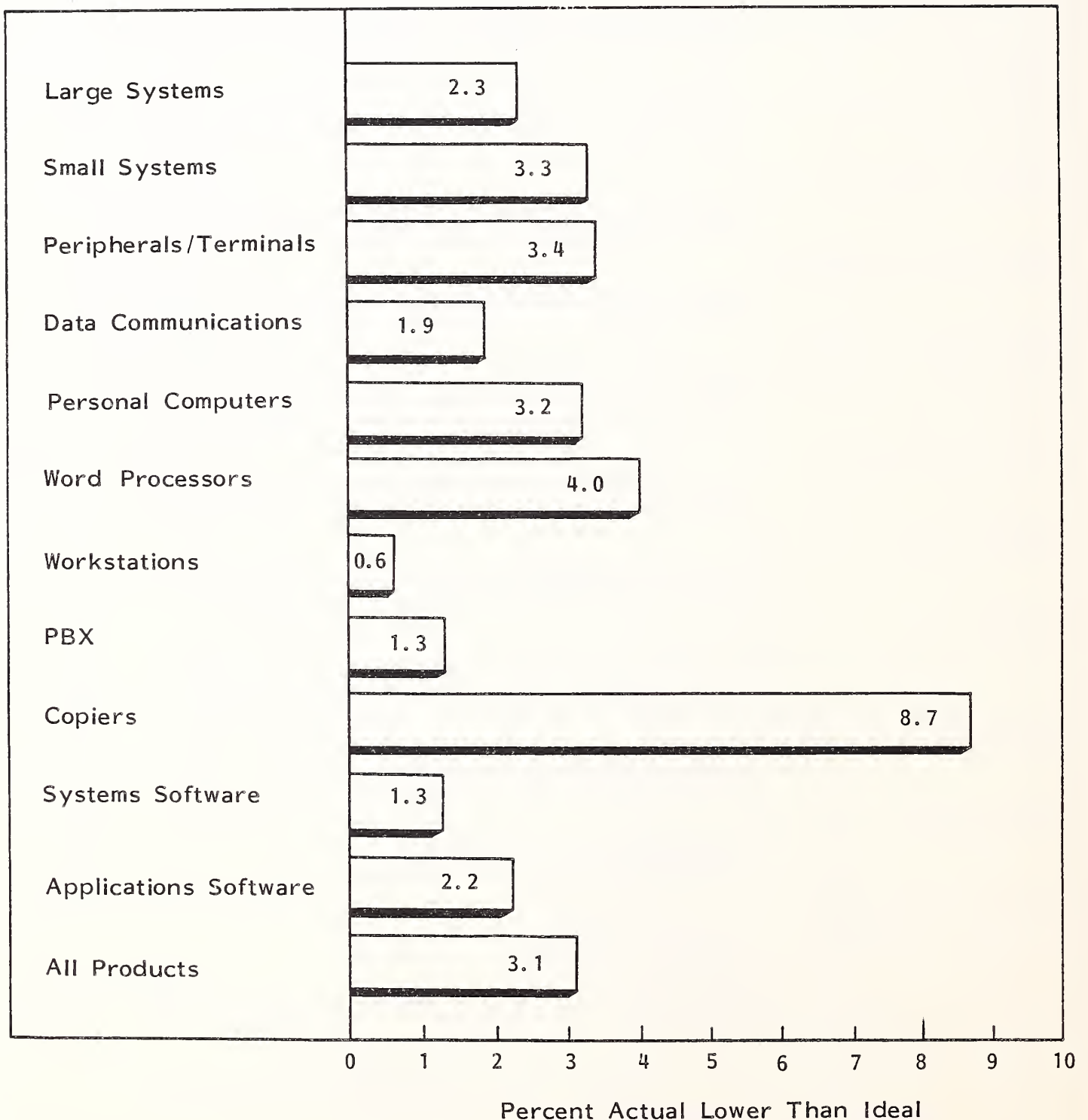
\*T.O.P. = Threshold of Pain (Minimum Time Acceptable to User).

† Percent of Available Time

SYSTEM AVAILABILITY: USER IDEAL REQUIREMENT  
UNITED KINGDOM

# EXHIBIT VI-15

## SYSTEM AVAILABILITY: ACTUAL COMPARED TO IDEAL UNITED KINGDOM

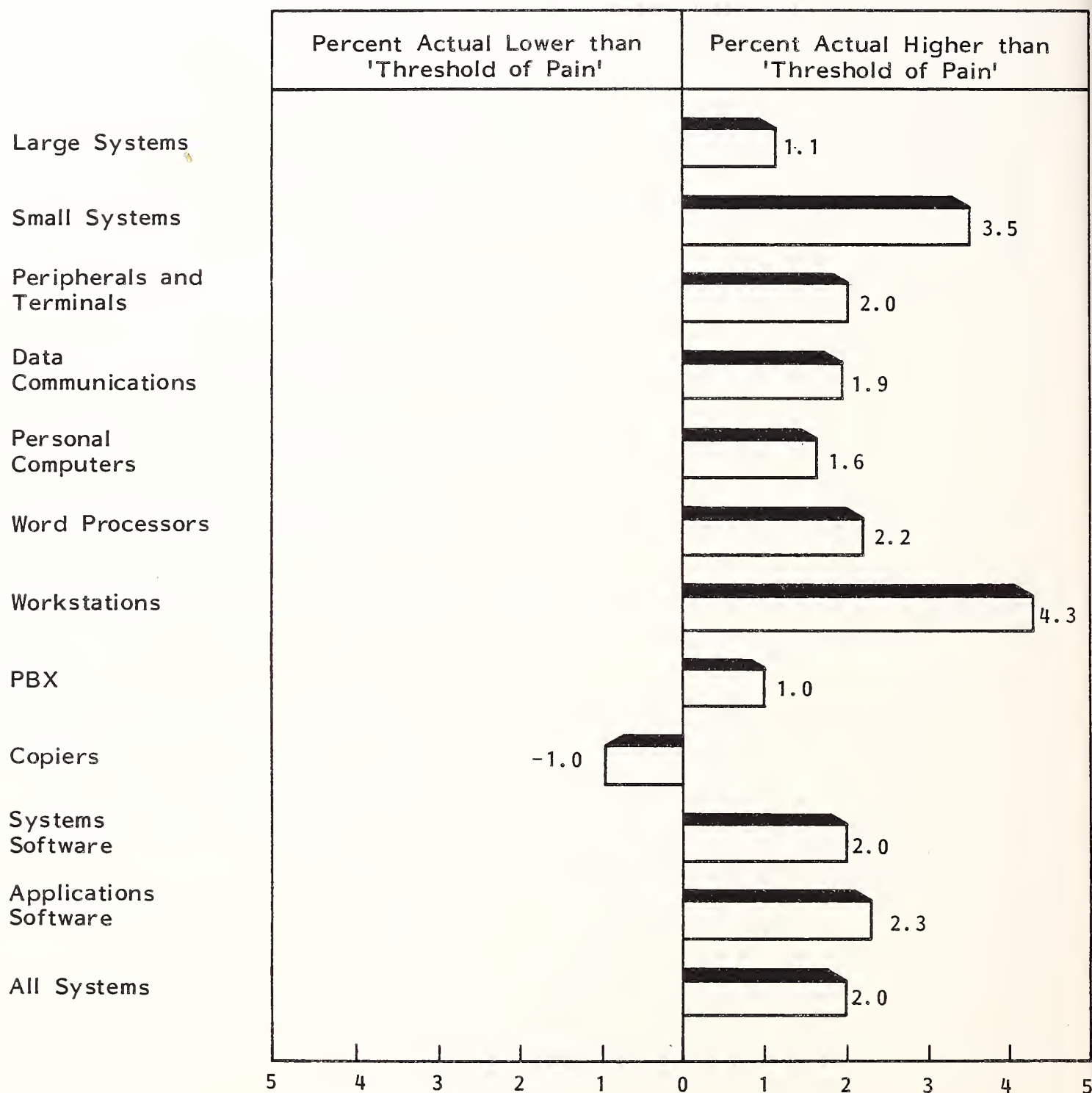


- Copiers (89.9% against the ideal 98.6%).
  - Word processors (95.3% against 99.3%).
  - Peripherals and terminals (94.7% against 98.1%).
  - Small systems (95.4% against 98.7%).
  - Personal computers (92.6% against 95.8%).
- On the other hand, those which perform best against the user ideal are:
    - Workstations (96.4% against the ideal of 97.0%).
    - PBX equipment (99.6% against the ideal of 98.3%).
    - Data communications equipment (97.4% against the ideal of 99.3%).
  - User ideals requirements are shown as Exhibit VI-14. Exhibit VI-15 compares the actual to the ideal.
  - Compared to the lowest acceptable level of system availability, the 'threshold of pain', the picture is a little better, as can be seen in Exhibit VI-16. All products, with the notable exception of copiers, are providing better availability than the lowest acceptable level. The individual product minimum requirements are shown as Exhibit VI-17.



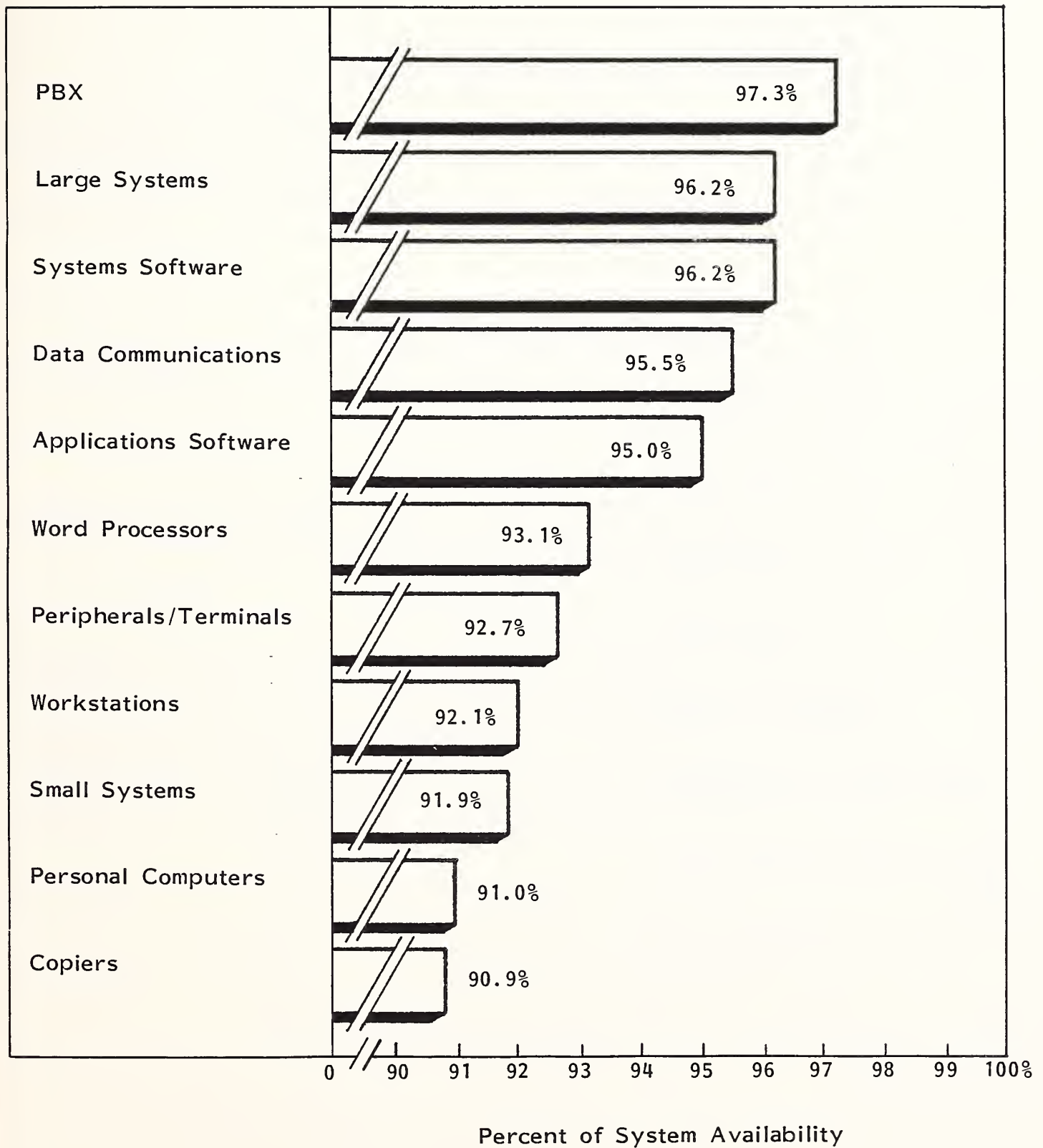
# EXHIBIT VI-16

## SYSTEM AVAILABILITY: ACTUAL COMPARED TO LOWEST ACCEPTABLE LEVEL UNITED KINGDOM



# EXHIBIT VI-17

## SYSTEM AVAILABILITY: USER THRESHOLD OF PAIN UNITED KINGDOM





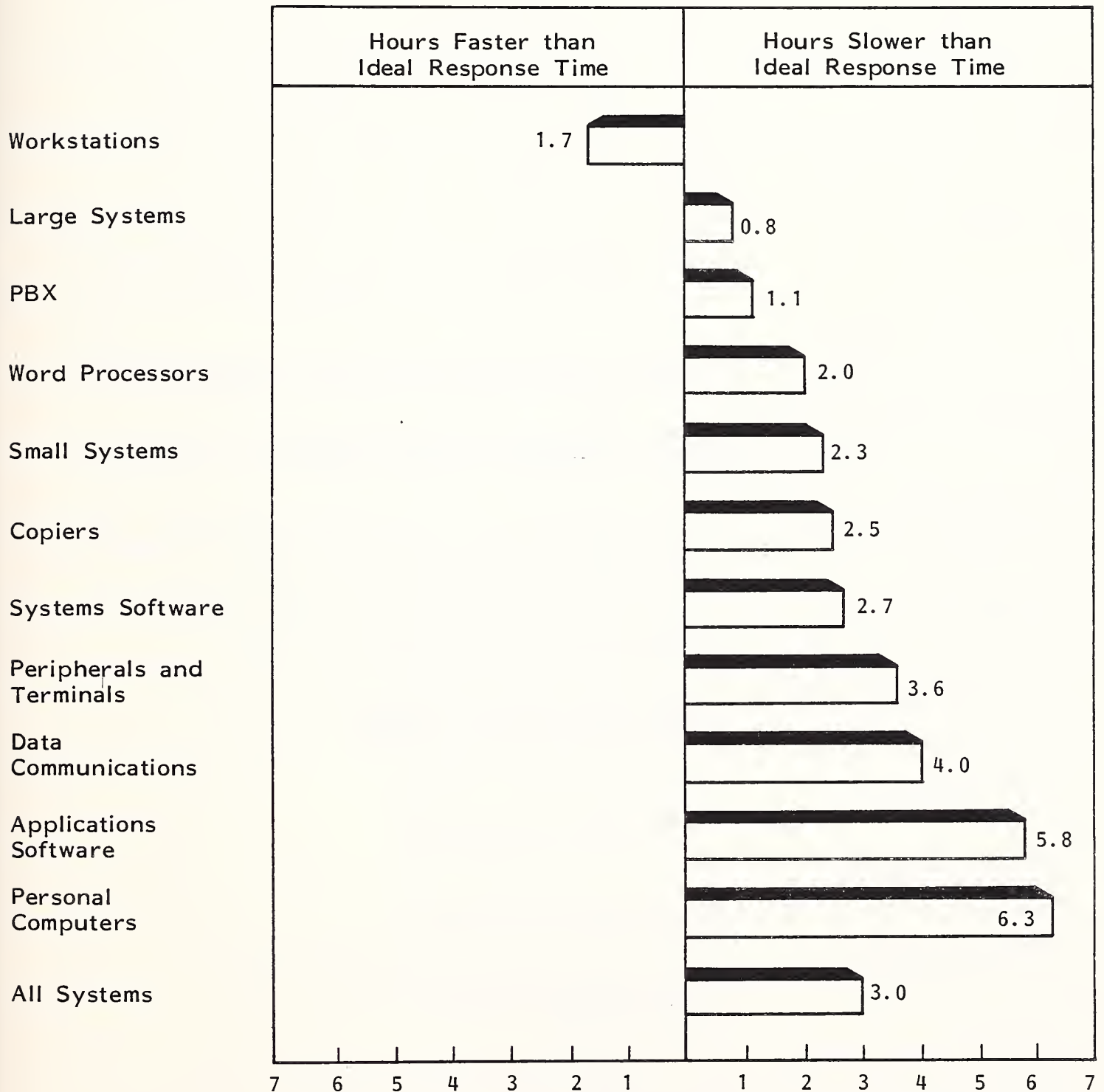
## E. RESPONSE AND REPAIR TIMES

### I. RESPONSE TIMES

- Average response time ranges from 2.6 hours for large systems out to 12.8 hours for PCs, with an average across all hardware of 6.4 hours. Software response times are somewhat longer, an average 8.0 hours, with systems software response rather faster at 6.3 hours and applications software taking much longer at 11.3 hours.
- When considering response time, the important factor is its relationship to user needs. Exhibit VI-18 shows how almost all product response times fall short of the user ideal. Only for PBX equipment does current performance meet the user ideal.
- As with system availability, the user ideal is not necessarily the same as the longest time the user is prepared to wait. Exhibit VI-19 compares the current actual response time with the 'threshold of pain'.
- The response time required by users will naturally vary according to the criticality of the equipment or software in use. This will tend to be reflected in the difference between the user's ideal response time and his threshold of pain. In other words, the more critical the equipment, the narrower will be the gap between the ideal response and the threshold of pain. The table below compares these two figures for the various product groups.

# EXHIBIT VI-18

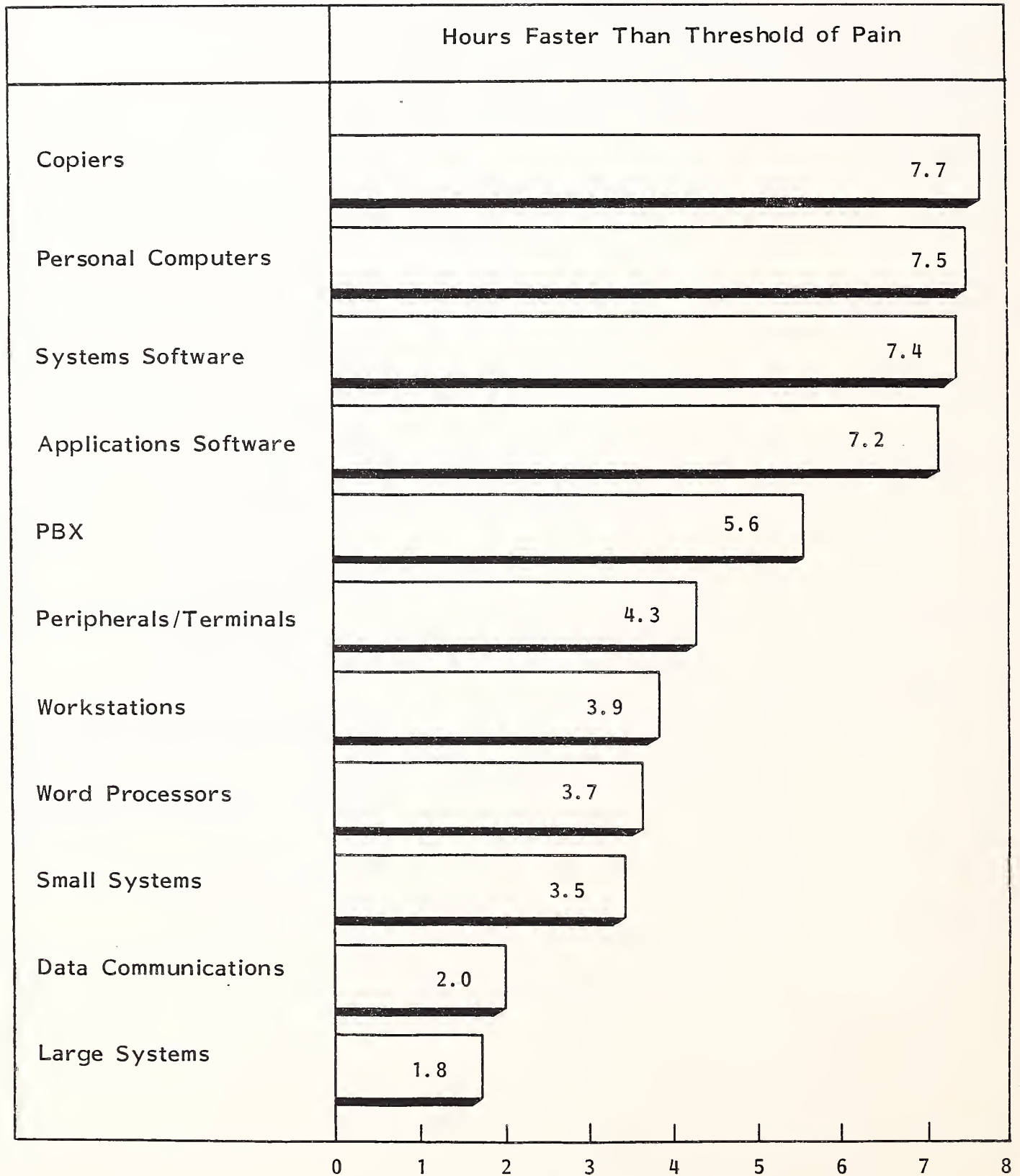
## ACTUAL RESPONSE TIME COMPARED TO IDEAL UNITED KINGDOM



Source: INPUT User Survey

# EXHIBIT VI-19

## ACTUAL RESPONSE TIME COMPARED TO LONGEST TIME ACCEPTABLE UNITED KINGDOM



<u>Product</u>	<u>Ideal Response (hrs)</u>	<u>Threshold of Pain (hrs)</u>	<u>Difference (hrs)</u>
Workstations	6.3	8.5	2.2
Large systems	1.8	4.4	2.6
Small systems	2.4	6.4	4.0
Word processors	3.4	9.1	5.7
Data communications	2.5	8.5	6.0
PBX equipment	1.6	8.3	6.7
Systems software	3.6	13.7	10.1
Copiers	4.9	15.1	10.2
Application software	5.5	18.5	13.0

- Compared to 1984, response time performance shows a considerable improvement, as can be seen in Exhibit VI-20. Only in the product areas of large systems and peripherals/terminals has there been a deterioration.

## 2. REPAIR TIMES

- Repair times vary in length from under two hours in the case of workstations (1.1 hours) and PBX equipment (1.7 hours) to over five hours in the case of word processors, applications software, peripherals and terminals, and, worst of all, personal computers. Exhibit VI-21 compares existing repair times with the user ideal, while Exhibit VI-22 compares them to the users' threshold of pain.
- As is so often the case, the ideal is not reached in any of the product groups.
- Compared to the longest acceptable repair time, however, manufacturers are, on average, meeting user demands, as can be seen on Exhibit VI-22.
- Repair times have generally shortened since 1984, falling from 5.5 hours overall to 4.3 hours. The most spectacular fall was for software products, with repairs of systems software taking 11 hours less and applications

# EXHIBIT VI-20

## 1985 RESPONSE TIME COMPARED TO 1984 RESPONSE TIME UNITED KINGDOM

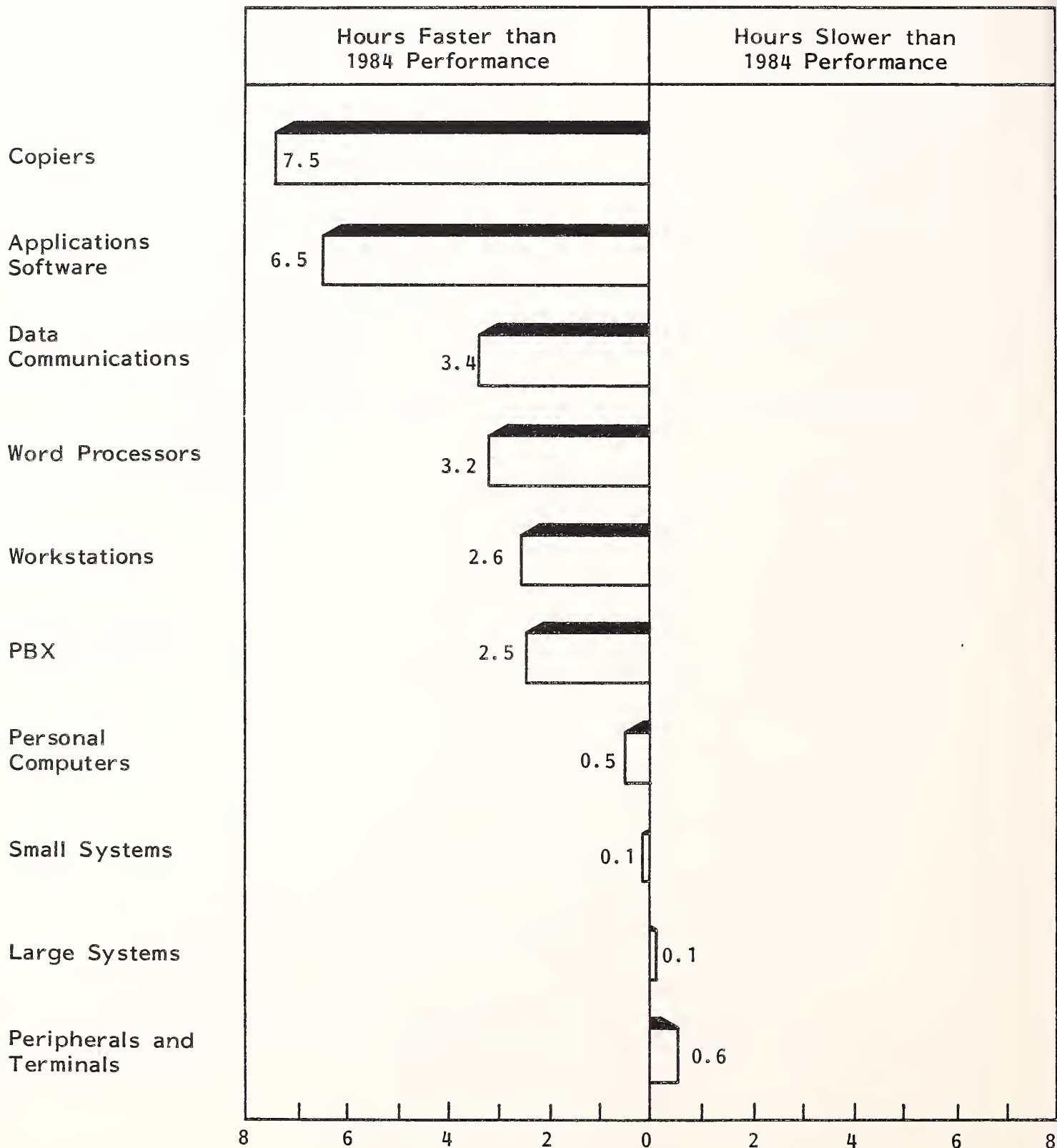


EXHIBIT VI-21

ACTUAL REPAIR TIME COMPARED TO USER IDEAL  
UNITED KINGDOM

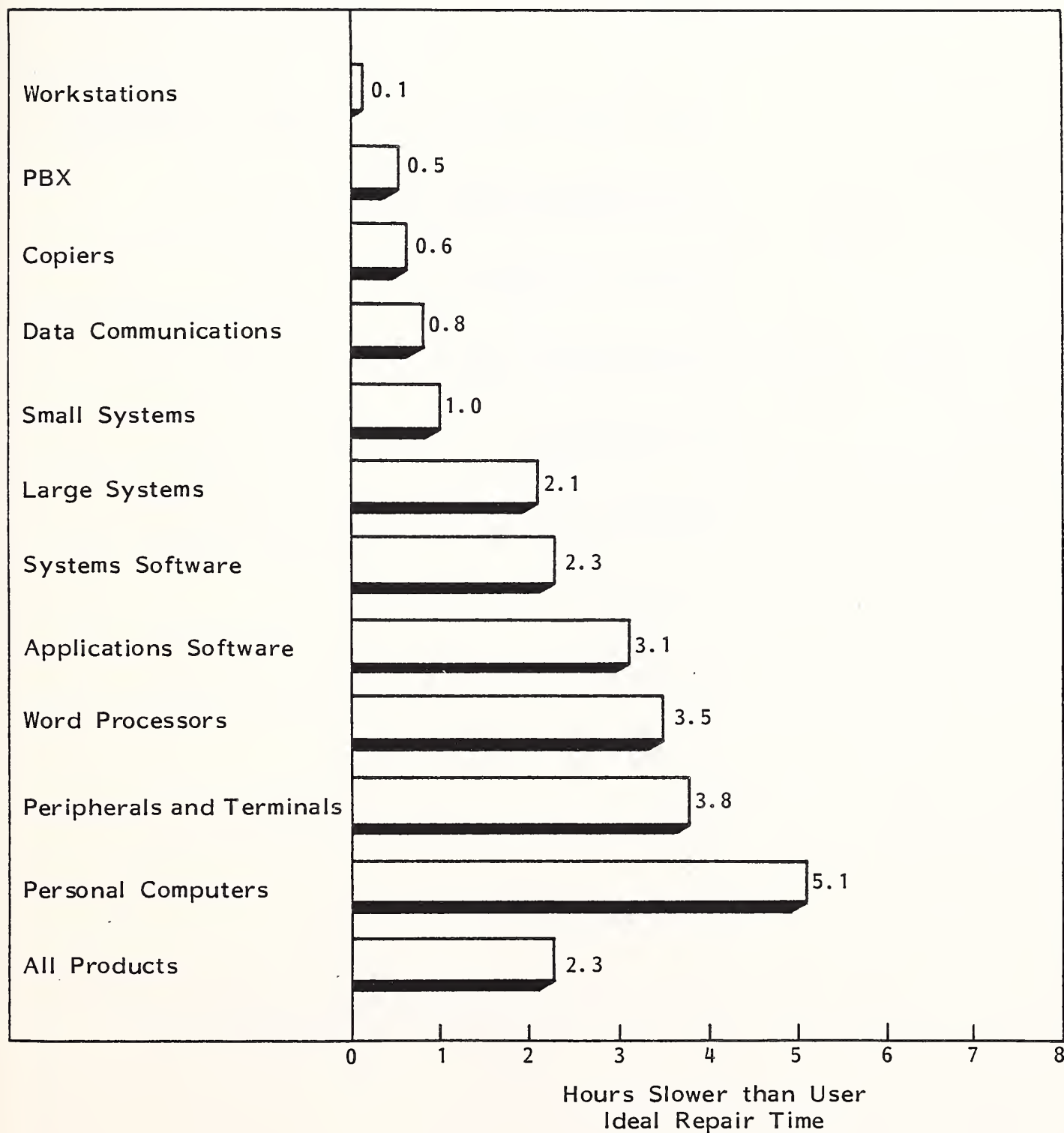
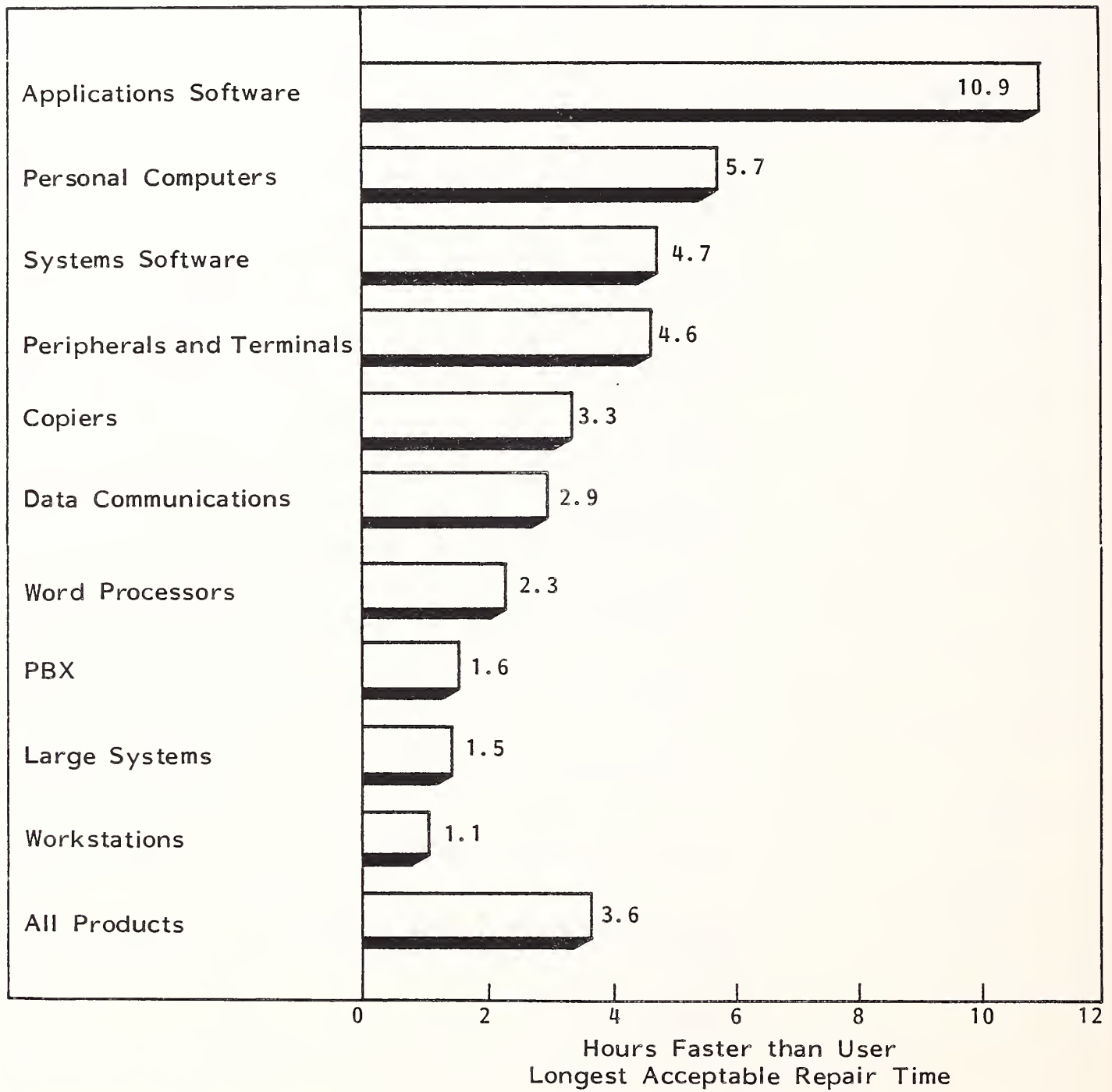




EXHIBIT VI-22

ACTUAL REPAIR TIME COMPARED TO USER THRESHOLD OF PAIN  
UNITED KINGDOM





software improving by 39 hours. Among other products there have been minor improvements and deterioration, as can be seen in Exhibit VI-23.

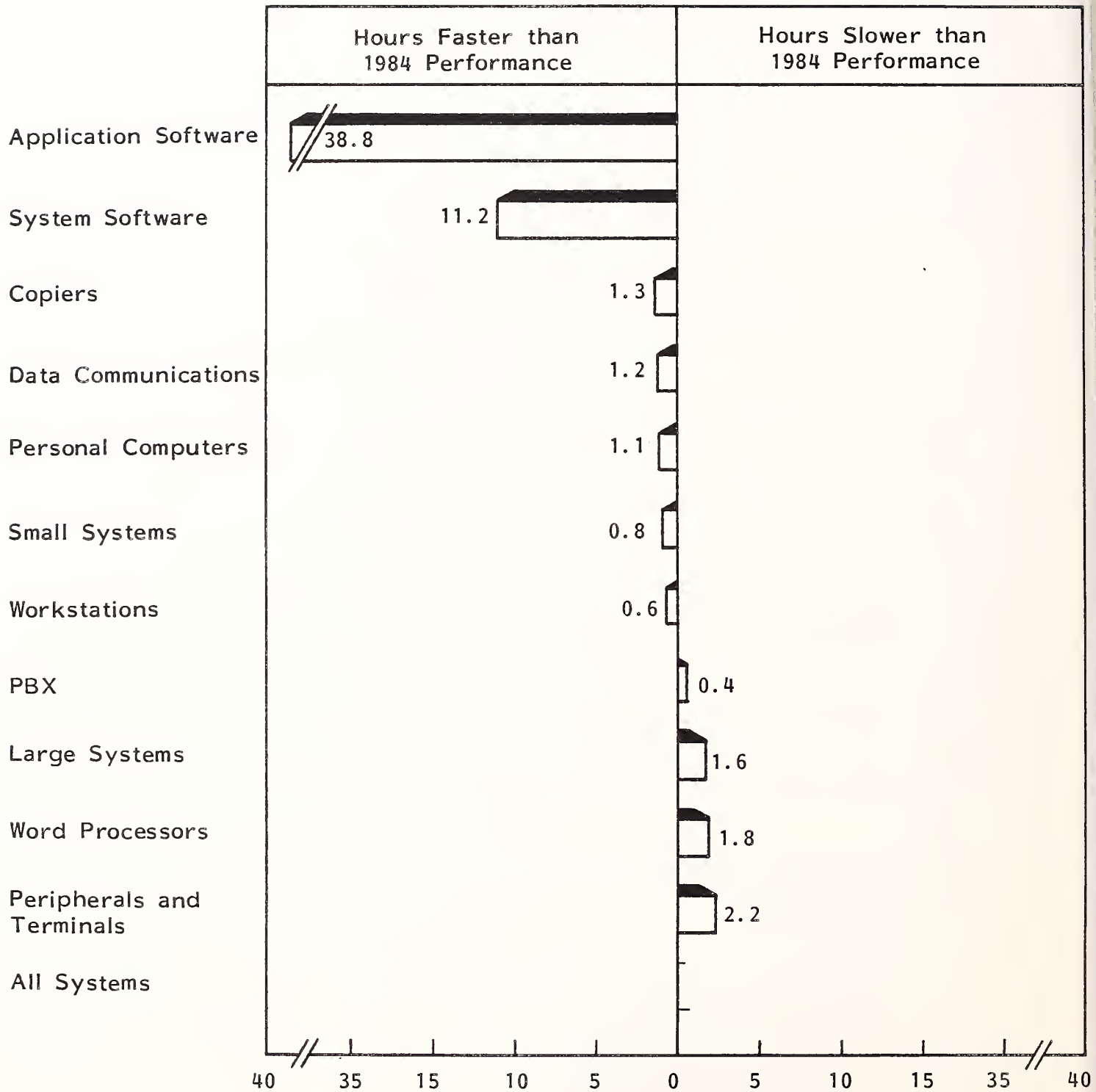
- The most serious deterioration in performance comes with peripherals and terminals, where repair times have increased by 2.2 hours.

#### F. REPAIR TURNAROUND

- Current user experience for total repair turnaround time (response time plus repair time) ranges from the fastest, 4.3 hours for PBX equipment, out to over 20 hours for completing the repair of PCs (see Exhibit VI-24).
- When compared to the user ideal, performance is best for workstations and worst for personal computers and data communications. Exhibit VI-25 compares actual turnaround time with the user ideal by expressing the actual time as a percent of the ideal. This analysis shows, for example, that repair performance for data communications equipment, which at under nine hours appears to be better than that for copiers, is in fact poorer in that it is further away from the user ideal.
- Exhibit VI-26 makes a similar comparison with the users' limit of tolerance. Here, it is interesting to note the closeness of performance across the various products compared to the wide variation when comparing to the ideal.
- A summary of all response, repair, and turnaround times is given in Exhibits VI-27 and VI-28.

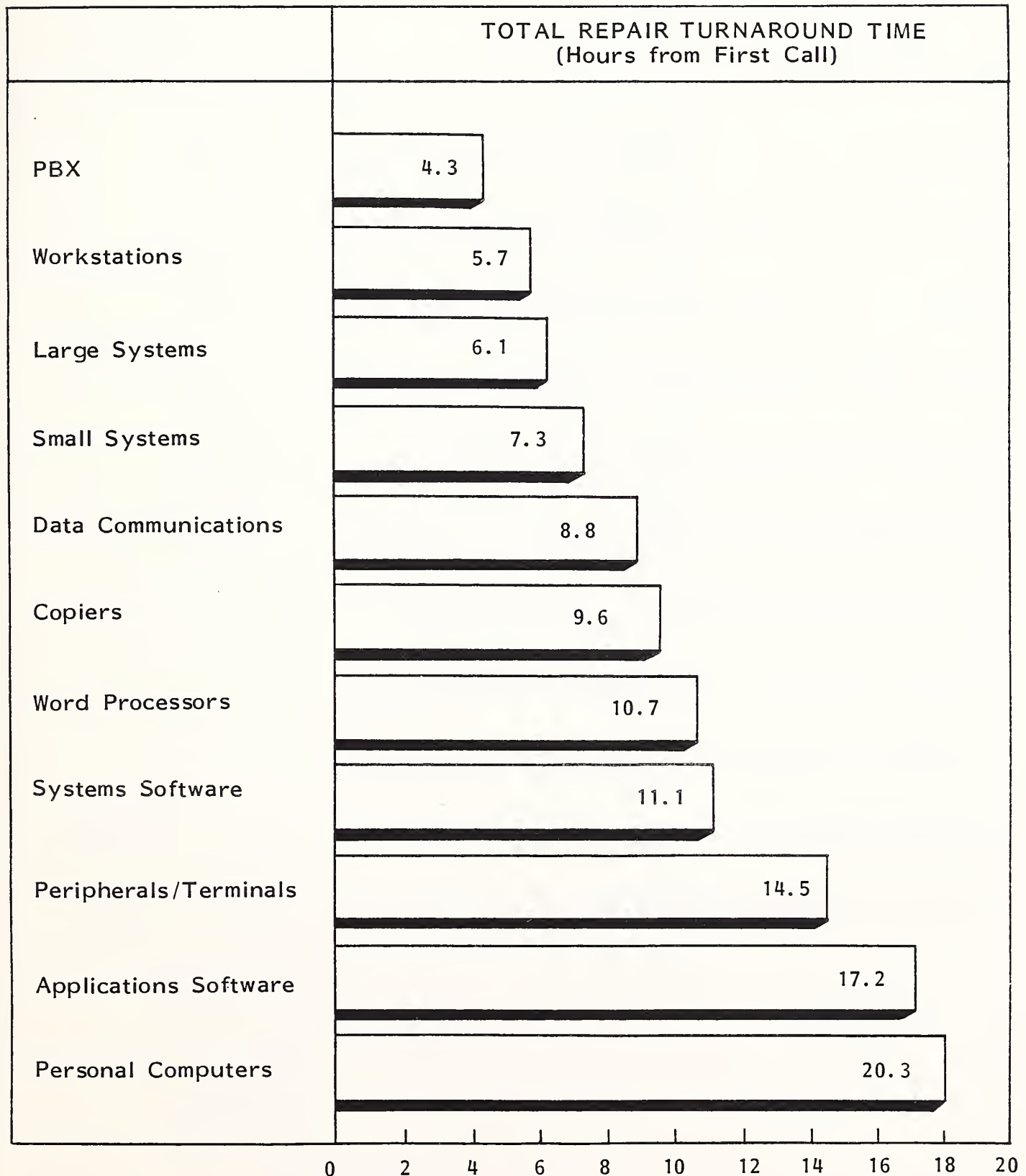
# EXHIBIT VI-23

## 1985 REPAIR TIME COMPARED TO 1984 REPAIR TIME UNITED KINGDOM



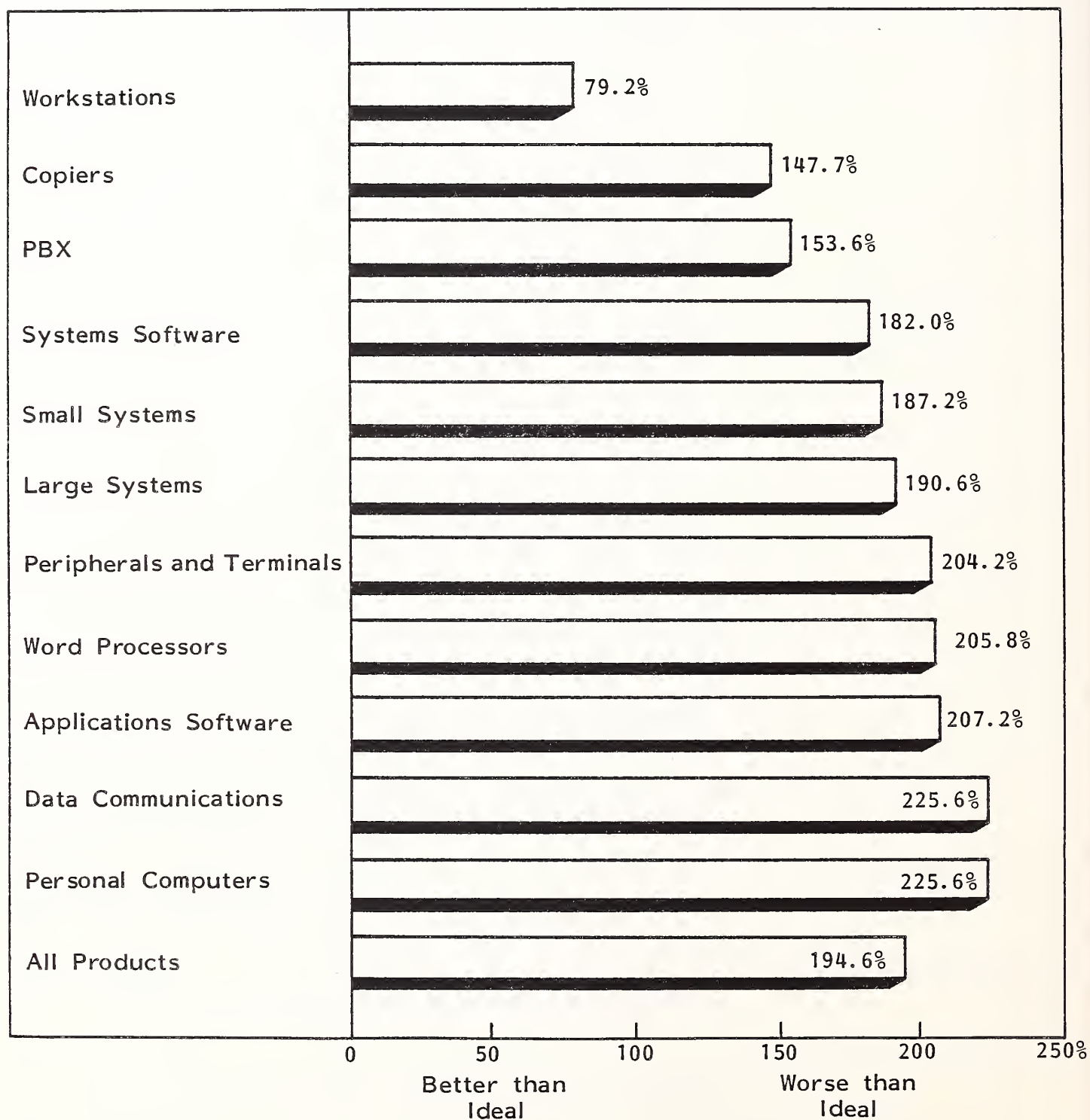
# EXHIBIT VI-24

## TOTAL REPAIR TURNAROUND TIME: USER EXPERIENCE UNITED KINGDOM



# EXHIBIT VI-25

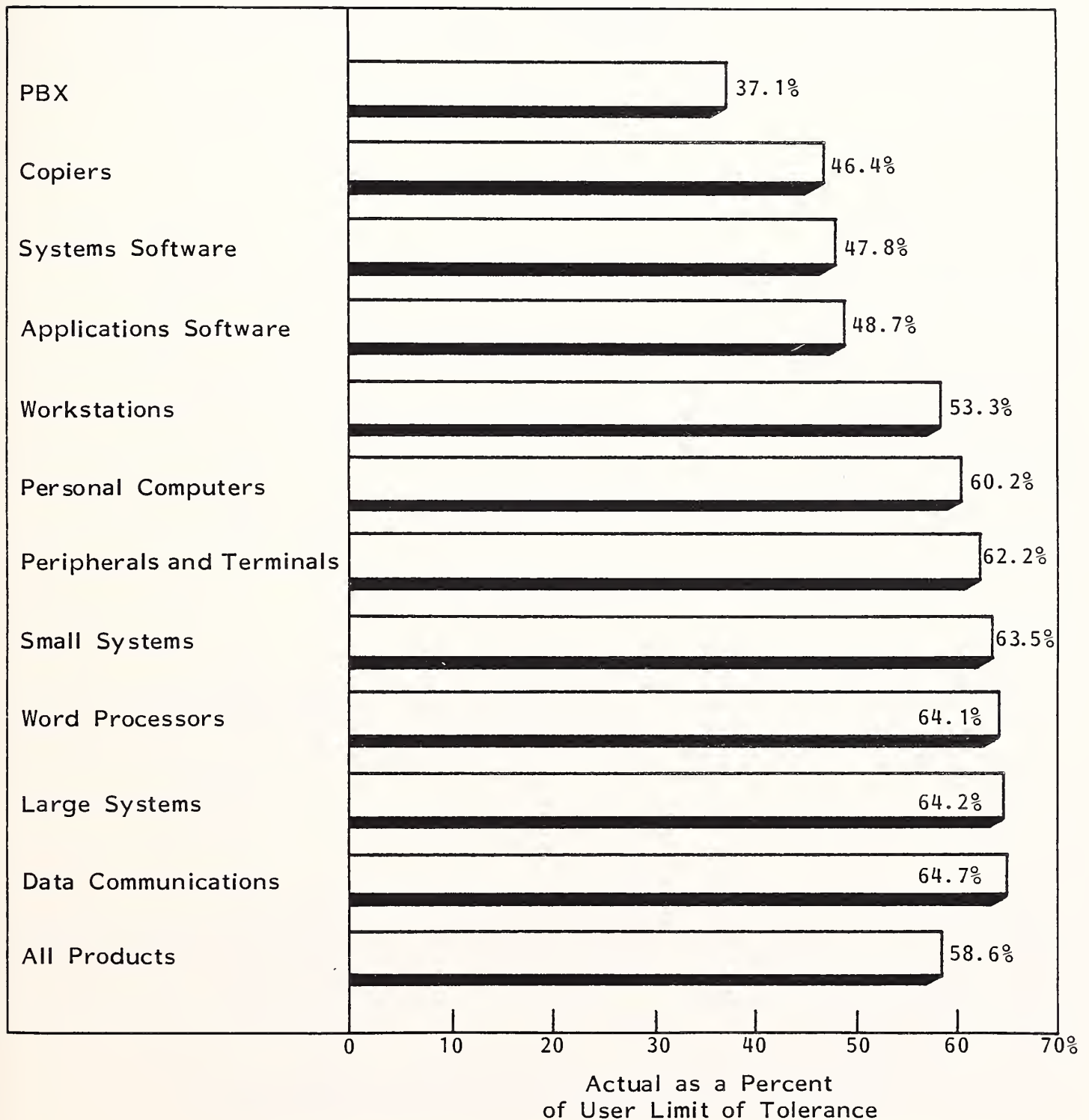
## REPAIR TURNAROUND TIME PERFORMANCE AGAINST USER IDEAL UNITED KINGDOM



Actual as a Percentage of User Requirement

EXHIBIT VI-26

REPAIR TURNAROUND TIME COMPARED TO  
USER LIMIT OF TOLERANCE  
UNITED KINGDOM





## EXHIBIT VI-27

## UNITED KINGDOM RESPONDENTS' VIEW OF RESPONSE AND REPAIR TIMES, 1985

PRODUCT CLASSIFICATION	RESPONSE TIME (Hours)			REPAIR TIME (Hours)		
	CURRENTLY RECEIVE	IDEAL	T.O.P.*	CURRENTLY RECEIVE	IDEAL	T.O.P.*
<u>Systems</u>						
Large Systems	2.6	1.8	4.4	3.6	1.5	5.1
Small Systems	4.7	2.4	6.4	2.6	1.6	5.1
Peripherals and Terminals	7.9	4.3	12.2	6.5	2.7	11.1
Data Communications	6.5	2.5	8.5	2.2	1.4	5.1
<u>Office Products</u>						
Personal Computers	12.8	6.5	20.3	7.6	2.5	13.3
Word Processors	5.4	3.4	9.1	5.3	1.8	7.6
Workstations	4.6	6.3	8.5	1.1	1.0	2.2
PBX	2.7	1.6	8.3	1.7	1.2	3.3
Copiers	7.4	4.9	15.1	2.2	1.6	5.5
All Hardware	6.4	3.5	10.2	4.3	1.9	7.6
<u>Software</u>						
Systems	6.3	3.6	13.7	4.8	2.5	9.5
Applications	11.3	5.5	18.5	5.9	2.8	16.8
All Software	8.0	4.3	15.4	5.2	2.6	12.4
All Systems in the United Kingdom	6.6	3.6	10.6	4.3	2.0	7.9

\* T.O.P. = Threshold of Pain (Maximum Time Acceptable to User).



## EXHIBIT VI-27 (Cont.)

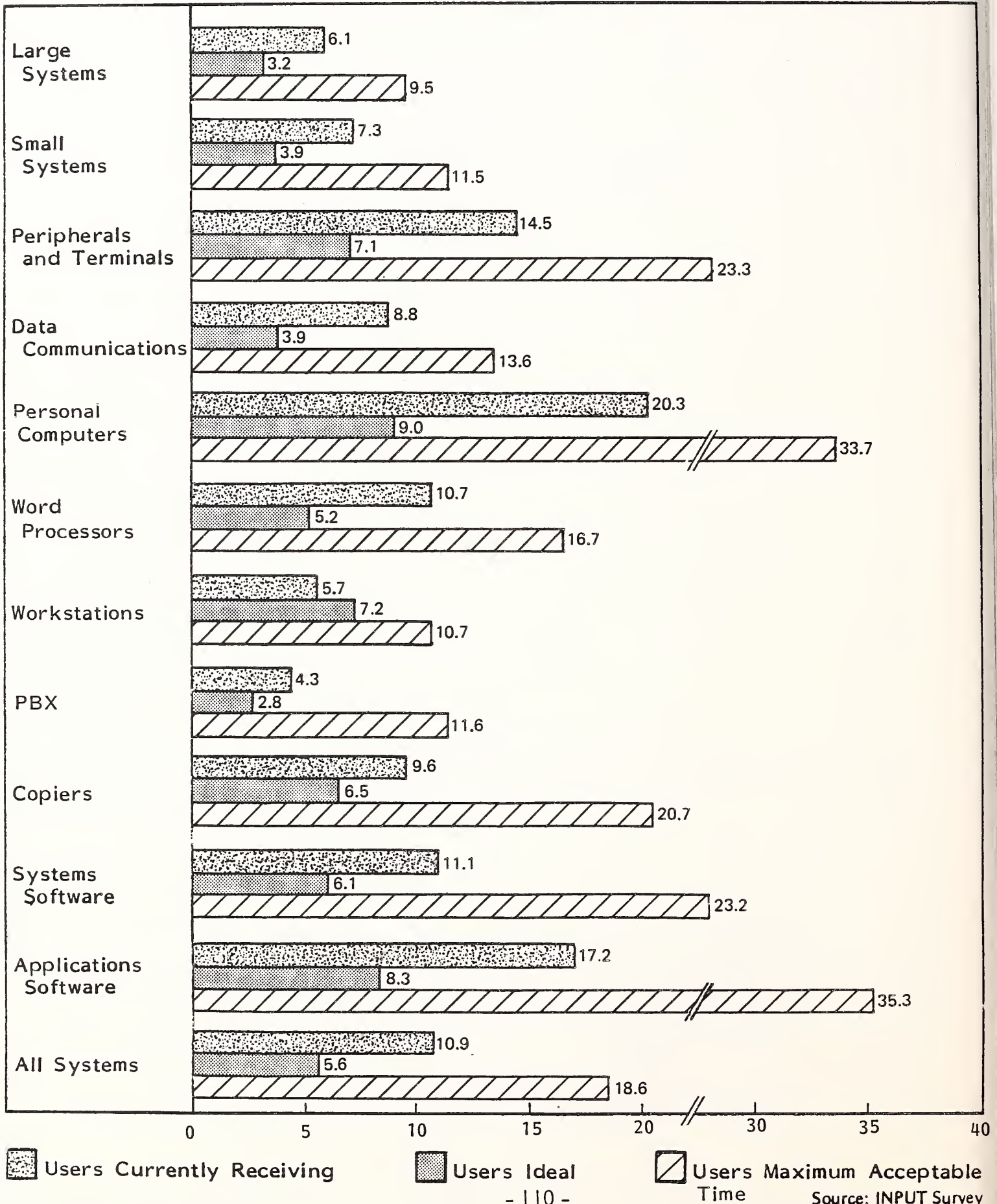
## UNITED KINGDOM RESPONDENTS' VIEW OF RESPONSE AND REPAIR TIME, 1985

PRODUCT CLASSIFICATION	TOTAL RESPONSE AND REPAIR TIME (Hours)		
	CURRENTLY RECEIVE	IDEAL	T.O.P.*
<u>Systems</u>			
Large Systems	6.1	3.2	9.5
Small Systems	7.3	3.9	11.5
Peripherals and Terminals	14.5	7.1	23.3
Data Communications	8.8	3.9	13.6
<u>Office Products</u>			
Personal Computers	20.3	9.0	33.7
Word Processors	10.7	5.2	16.7
Workstations	5.7	7.2	10.7
PBX	4.3	2.8	11.6
Copiers	9.6	6.5	20.7
All Hardware	10.7	5.5	17.8
<u>Software</u>			
Systems	11.1	6.1	23.2
Applications	17.2	8.3	35.3
All Software	13.2	6.8	27.8
All Systems in the United Kingdom	10.9	5.6	18.6

\*T.O.P. = Threshold of Pain (Maximum Time Acceptable to User).

# EXHIBIT VI-28

## TOTAL RESPONSE/REPAIR TIME - U.K. USER NEED AND VENDOR PERFORMANCE (Time in Hours)

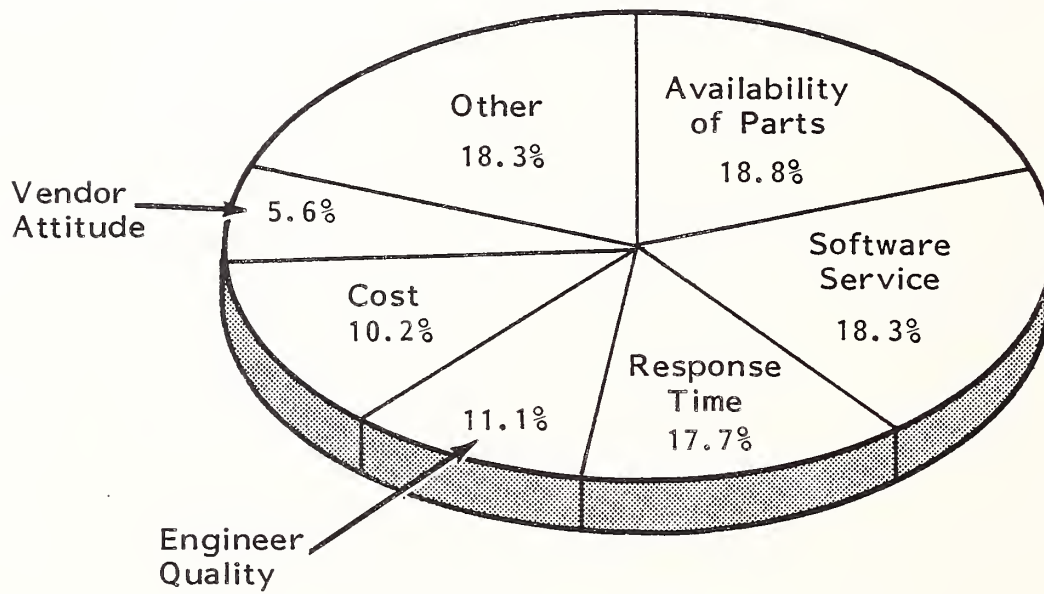


## G. WORST AND BEST FEATURES OF SERVICE

- Taking the bad news first, users were asked to say what they found to be the worst features of the service they are receiving. This question elicited some 30 different responses, but three areas in particular cropped up repeatedly:
  - Poor availability of service parts.
  - Poor software service.
  - Poor response time.
- Exhibit VI-29 analyzes the response and Appendix A quotes the views of a number of users.
- Two areas of particular concern are vendor attitude and the quality of engineers on-site. Both of these criticisms were levied in 1984.
- Compared to 1984, the cost of service attracts less comments, down from 17% of all criticisms to under 10%. The availability of parts, however, seems to be becoming a more serious problem. After decreasing steadily in terms of user complaints over the last few years, it has now re-emerged as the most criticised aspect of service.
- Software service also has attracted considerably more criticism in 1985 than in 1984. Last year it appeared to be a relatively minor problem, attracting only 2% of all complaints, but in 1985 it attracted over 17% of all complaints.
- Some criticisms raised in 1984 have diminished considerably in 1985, particularly those related to preventive maintenance. These accounted for 10% of all mentions last year, but have not emerged at all in the 1985 responses.

EXHIBIT VI-29

WORST FEATURES OF SERVICE - UNITED KINGDOM USER VIEWS



Percent of Responses

- Users were also asked to identify those aspects of service which particularly annoyed them, and these are summarised in Exhibit VI-30 and amplified by the user quotes in Appendix B.
  - Cost is by far the most annoying element, and a number of users raised the fact that equipment is becoming more reliable, but this reliability is not being reflected in reduced maintenance charges.
  - Communications again is raised as a problem area. Users do not feel that they are given adequate information on which to make decisions.
  - The tendency of service engineers to blame extraneous sources is also raised by several users.

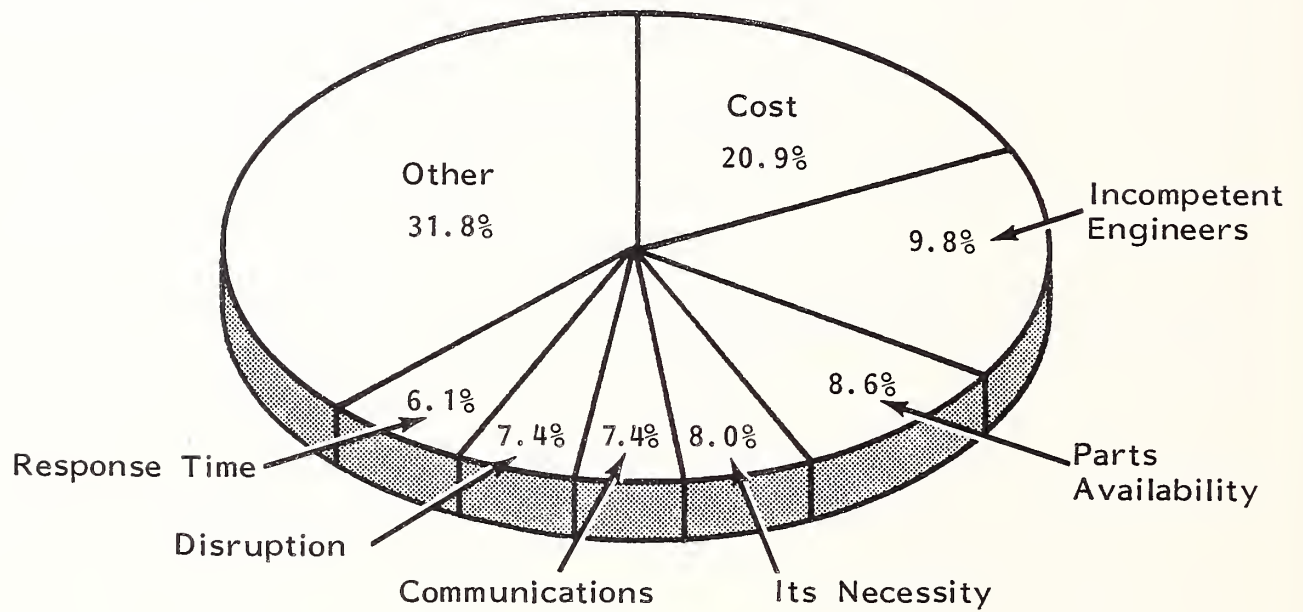
#### H. BUDGET AND PRICING ISSUES

- User annual maintenance budgets in the U.K. were expected to rise by almost 29% to 94,800 pounds. This will be followed by a further 18% rise in 1986 (see Exhibit VI-31).
- With maintenance prices rising at only some 7-10% annually, the implications are that users are either planning significant investments in new products or are overstating their budget intentions.
- Discounting prices is always a sensitive area, but, as Exhibit VI-32 shows, the practice is not uncommon. Over one-quarter of users sampled receive a discount on their maintenance charges. The reasons given are primarily:
  - Group or contract value.
  - Educational discount.
  - Using remote diagnostics.



EXHIBIT VI-30

MOST ANNOYING ASPECTS OF MAINTENANCE  
UNITED KINGDOM



Percent of Responses



## EXHIBIT VI-31

UNITED KINGDOM USERS' AVERAGE MAINTENANCE BUDGETS  
( £ Sterling)

YEAR	AVERAGE BUDGET ( £ Thousands)			SOFTWARE AS PERCENT OF TOTAL
	Hardware	Software	Total	
1984	£49,962	£23,680	£73,642	32.2%
1985	65,949	28,853	94,802	30.4%
1986	76,435	35,400	111,835	31.7%

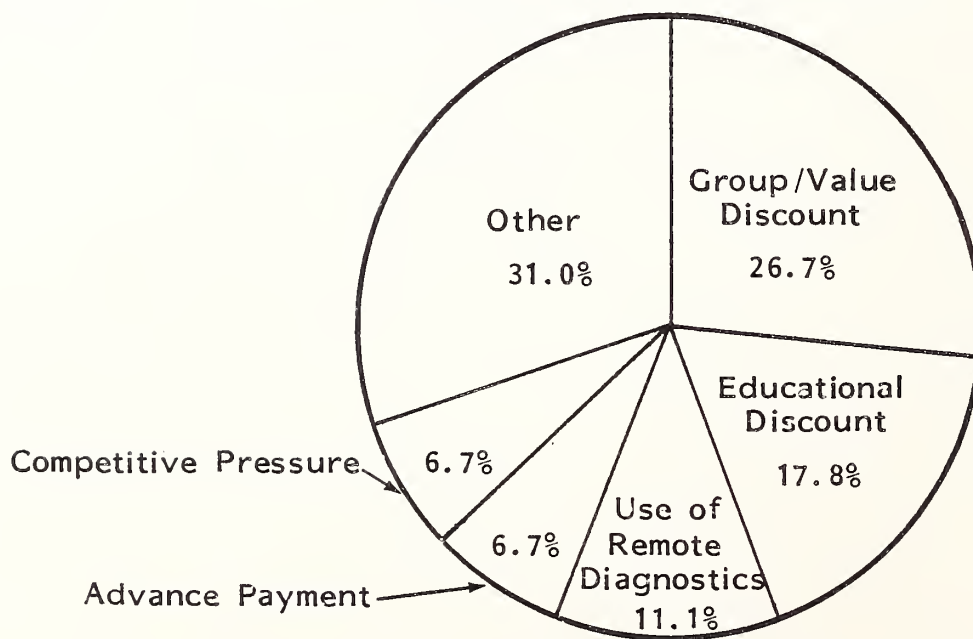
EXHIBIT VI-32

MAINTENANCE DISCOUNTS  
UNITED KINGDOM



Percent of Users

Reason for Receiving Discount

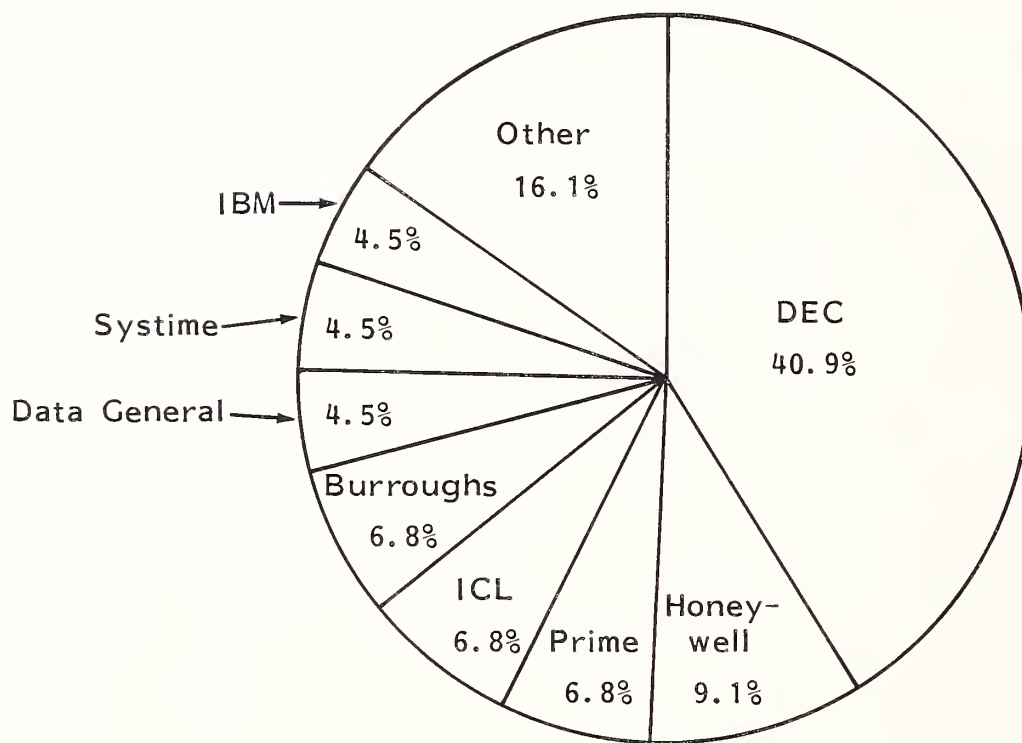


Percent of Reasons

- Among the manufacturers, DEC is the leading discounter, accounting for 40% of all discounts given, compared to only 4.5% for IBM (see Exhibit VI-33).
- As far as price increases for existing equipment are concerned, user views are shown in Exhibit VI-34. Price increases incurred during 1984 were higher than had been anticipated, but still fell within the users' limits of tolerance. Price rises for 1985 were expected to be marginally lower in 1985 overall.
- Exhibit VI-35 shows that users are generally willing to help servicers in a number of areas, particularly diagnostic assistance, if they are given assistance. They are similarly willing to help replace boards and to patch software, but are reluctant to deliver portable machines to repair centres.
- Users are in principle prepared to pay a modest premium for extra or improved service, particularly guaranteed up-time and software consulting for the servicer. The premiums acceptable are modest, around 13-14% above the bare maintenance charge, but it must be stressed that not all users would be prepared to pay this premium (see Exhibits VI-36 and VI-37).

EXHIBIT VI-33

INCIDENCE OF VENDORS GIVING DISCOUNTS  
UNITED KINGDOM



Percent of All Users Receiving Discounts

## UNITED KINGDOM RESPONDENTS' VIEW OF MAINTENANCE PRICING INCREASES

MAINTENANCE PRICE INCREASES		Systemst						Office Productst						Softwaret																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
		Large Systems			Small Systems			Peripherals and Terminals			Data Communications			Personal Computers			Word Processors			Workstations			PBX			Copiers			Systems			Applications			All Systems in the United Kingdom																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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\*T.O.P. = Threshold of Pain (Maximum Time Acceptable to User).

†Percent Price Increase

Source: INPUT Survey.

# EXHIBIT VI-35

## UNITED KINGDOM RESPONDENTS' WILLINGNESS TO AID SERVICER IF GIVEN A DISCOUNT

HELP TO VENDOR	SYSTEMS						OFFICE PRODUCTS				SOFTWARE		
	SYSTEMS						OFFICE PRODUCTS				SOFTWARE		
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Personal Computers	Word Processors	Workstations	PBX	Copiers	ALL HARDWARE	Systems	Applications	All Software
Helping to Diagnose	8.5	8.7	8.0	8.2	8.2	6.8	9.0	7.2	7.4	8.2	8.9	8.9	8.9
Helping Replace Boards	6.9	7.2	6.7	7.6	7.7	6.1	8.7	6.1	6.2	7.0	-	-	7.0
Helping to Patch Software	7.8	7.5	6.7	7.8	7.1	6.3	3.9	5.4	-	7.1	7.8	7.8	7.2
Delivering Portable Machines to Repair Centers	4.5	4.8	4.6	4.6	4.9	4.1	5.8	4.6	4.3	4.6	-	-	4.6

SOURCE: INPUT 1985 User Survey

Rating: 1 = Unwilling, 10 = Willing



PERCENTAGE OF UNITED KINGDOM RESPONDENTS WHO ARE  
WILLING TO PAY FOR EXTRA/IMPROVED SERVICE

TYPE OF EXTRA/IMPROVED SERVICE	SYSTEMS						OFFICE PRODUCTS				SOFTWARE	
	Large Systems		Small Systems		Peripherals and Terminals		Data Communications		Personal Computers		Word Processors	
Guaranteed Up-time	52%	41%	20%	32%	23%	23%	23%	15%	40%	23%	12%	16%
Guaranteed Response Time	54	42	18	26	28	24	15	38	23	13	19	
Guaranteed Turnaround Time on Software	48	29	12	24	19	15	4	23	-	12	18	
Software Consulting From Servicer	44	28	11	12	18	14	8	10	-	12	16	
Software Enhancements From Servicer	43	29	13	13	25	15	8	15	-	12	15	
Personalised Service	42	25	11	10	17	13	15	20	12	5	8	

Source: INPUT 1985 User Survey

# EXHIBIT VI-37

PERCENTAGE ABOVE BASE THAT UNITED KINGDOM RESPONDENTS  
WOULD BE WILLING TO PAY FOR EXTRA/IMPROVED SERVICE

TYPE OF EXTRA/IMPROVED SERVICE	SYSTEMS						OFFICE PRODUCTS					SOFTWARE		
	Large Systems						ALL HARDWARE					All Systems in United Kingdom		
	Small Systems	Peripherals and Terminals	Data Communications	Personal Computers	Word Processors	PBX	Copiers	Systems	Applications	All Software				
Guaranteed Up-time	16%	15%	13%	17%	14%	15%	13%	18%	11%	15%	10%	8%	9%	14%
Guaranteed Response Time	14	15	13	14	12	13	13	13	10	13	8	7	8	13
Guaranteed Turnaround Time on Software	9	19	17	14	10	14	5	13	5	14	10	9	9	13
Software Consulting From Servicer	9	20	15	18	13	15	8	16	5	15	8	7	8	14
Software Enhancements From Servicer	10	19	14	15	9	14	8	15	6	13	9	8	9	13
Personalised Service	7	15	13	14	11	15	4	11	11	12	7	10	8	11

SOURCE: INPUT 1985 User Survey

VII ITALY



## VII ITALY

### A. INTRODUCTION

- The Italian results are based on 38 completed responses from a variety of industries, as shown in Exhibit VII-1.
- The hardware used by respondents is predominantly IBM, as can be seen in Exhibit VII-2.

### B. IMPORTANCE OF SERVICE FACTOR

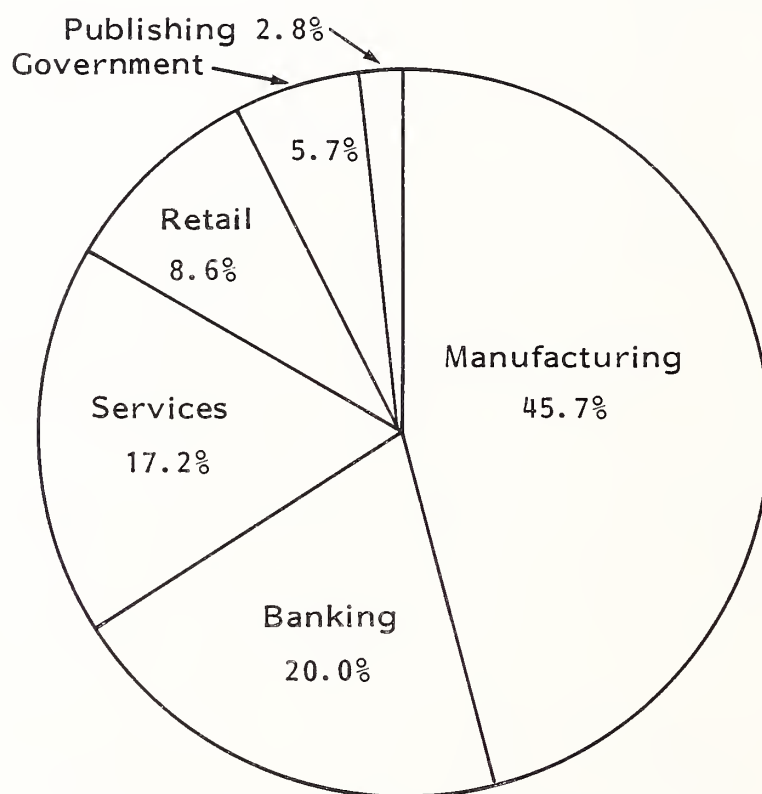
- The four key service criteria are, as usual, reliability, system availability, repair time, and response time, as can be seen in Exhibit VII-3. Price is rated as one of the least important factors in the service mix.

### C. QUALITY OF SERVICE RATINGS

- The overall quality of service has declined, rating 6.8 compared to 7.2 in 1984.

EXHIBIT VII-1

PROFILE OF USERS BY INDUSTRY SECTOR  
ITALY



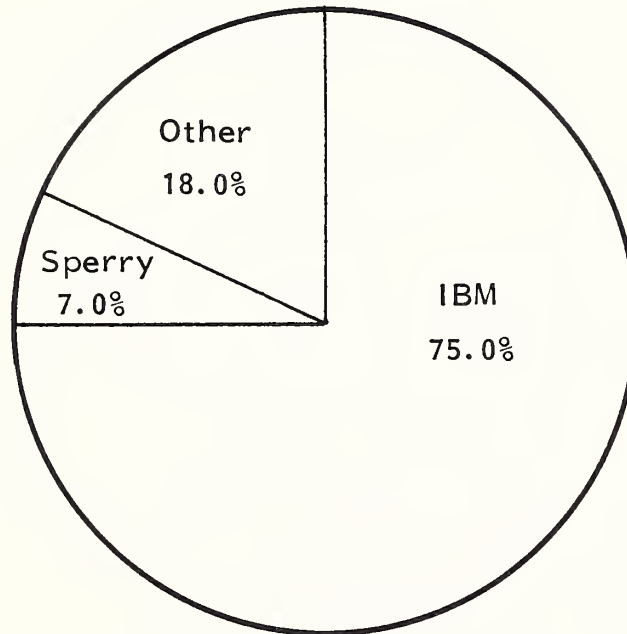
Total Responses = 38

Source: INPUT 1985 User Survey



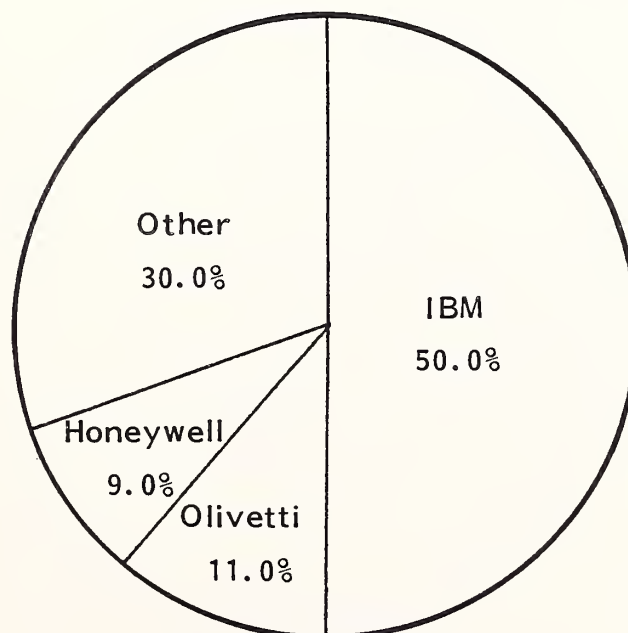
EXHIBIT VII-2

ITALIAN RESPONDENTS' INSTALLED EQUIPMENT  
(Percent Using)



Large Systems

Sample Size: 28

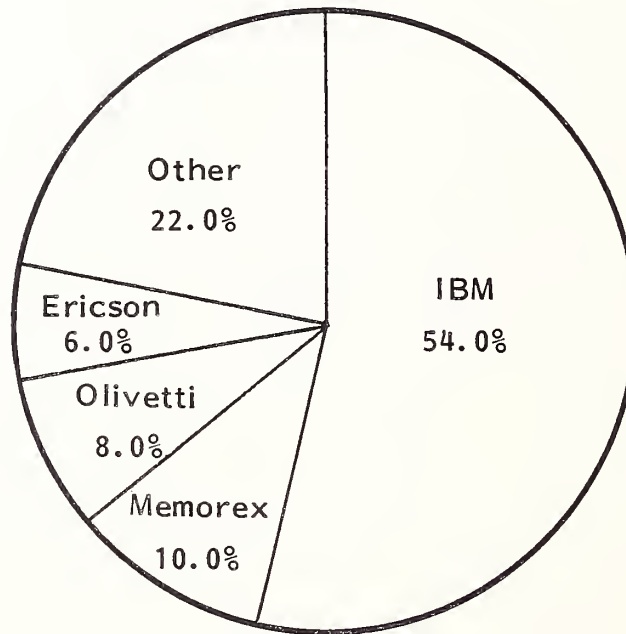


Small Systems

Sample Size: 34

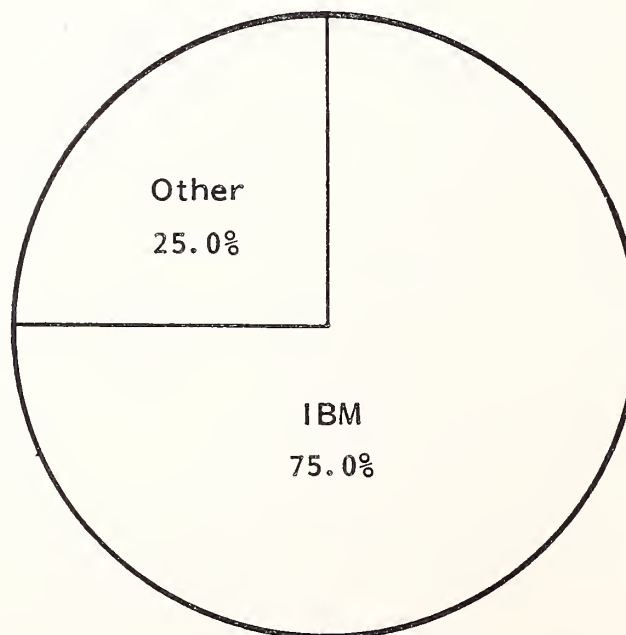
EXHIBIT VII-2 (Cont.)

ITALIAN RESPONDENTS' INSTALLED EQUIPMENT  
(Percent Using)



Peripherals and Terminals

Sample Size: 50

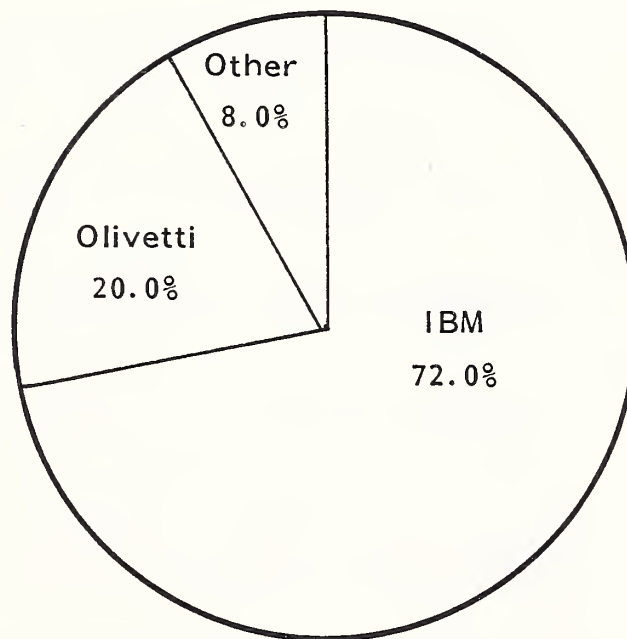


Data Communications

Sample Size: 18

EXHIBIT VII-2 (Cont.)

ITALIAN RESPONDENTS' INSTALLED EQUIPMENT  
(Percent Using)

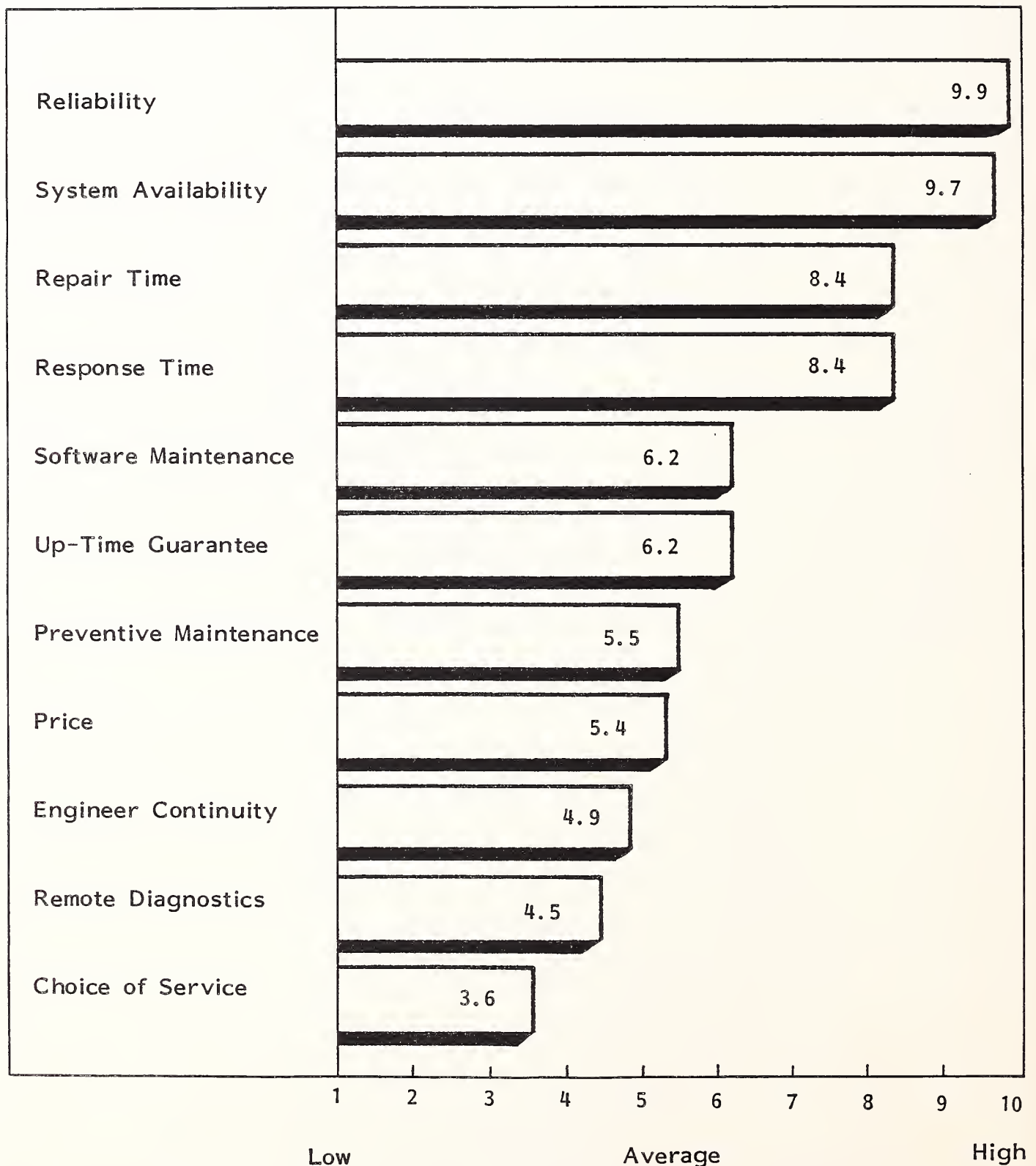


Personal Computers

Sample Size: 25

# EXHIBIT VII-3

## RELATIVE IMPORTANCE OF SERVICE FACTORS: ITALY (Average Ranking)



- Particularly poor quality is found in:
  - Preventive maintenance effectiveness.
  - Remote diagnostics.
  - Quality of information and communications.
- Product reliability has improved across most product categories, but it has deteriorated for copiers, systems software, and applications software.
- Value of service compared to price has declined with the exception of personal computers which rates 6.5 compared 5.5 in 1984.
- Exhibits VII-4 through VII-6 elaborate on user ratings of service quality.
- The change in service quality in 1985 compared to 1984 is shown in Exhibit VII-7. In terms of overall quality, the change has been adverse for most products, but there has been an improvement in data communications equipment and personal computer service.
- With so many factors deteriorating, it is not surprising to see that the overall value for money of service has also declined.
- Service quality for the various product groups is shown in Exhibit VII-8, and it is the office automation and software products which are depressing the overall average.
- Among the service elements, only product reliability, parts availability, and engineer ability are bright spots. Performance in the other areas is barely reaching an acceptable level (see Exhibit VII-9).

# EXHIBIT VII-4

## ITALIAN RESPONDENTS' COMPLAINTS ABOUT SERVICE

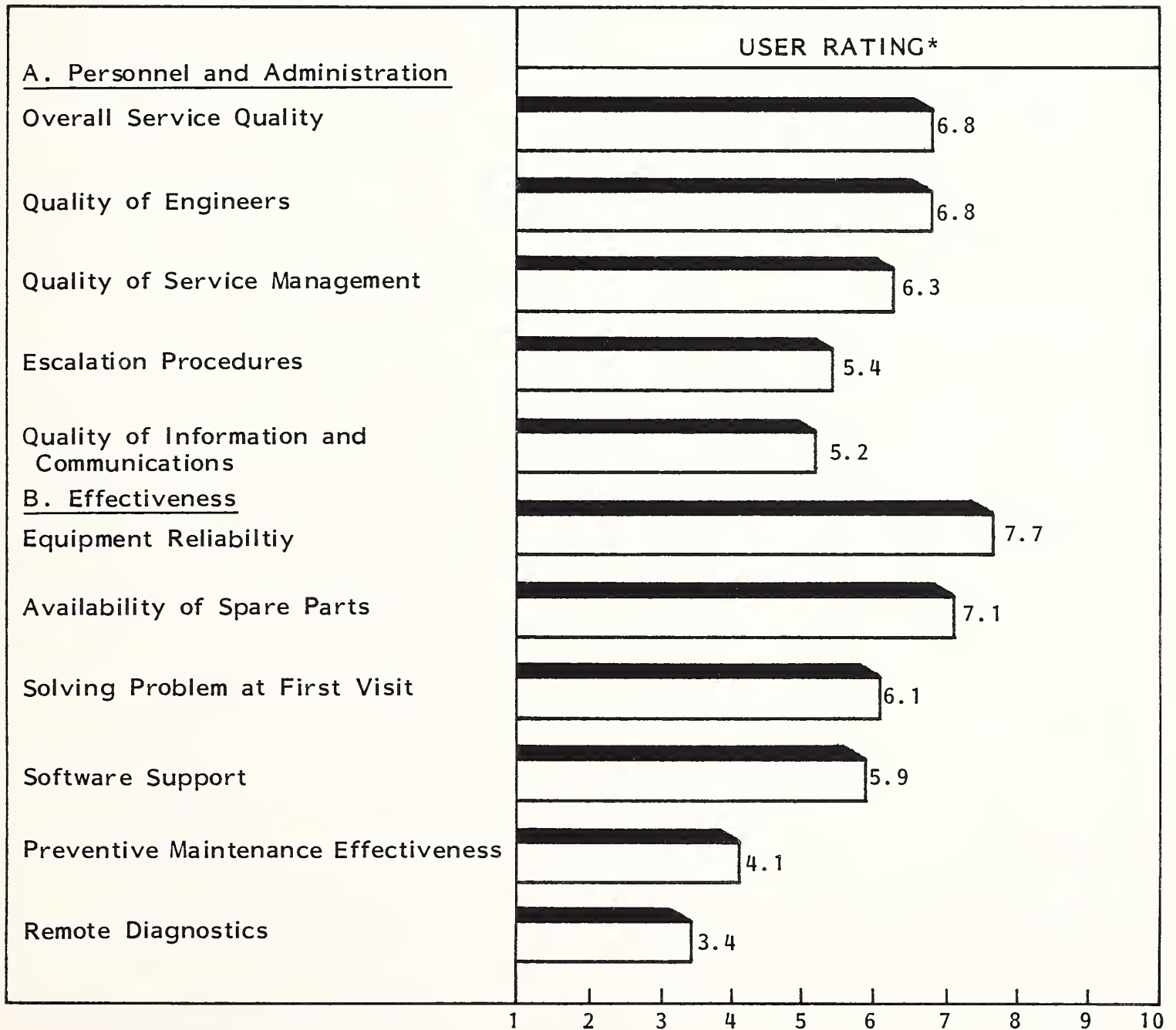
Product Segment	Overall Quality of Service*	Quality of Engineers*	Quality of Service Management*	Availability of Spare Parts*	Software Support Capability*	Preventive Maintenance Effectiveness	Remote Diagnostics	Quality of Information and Communications	Value of Service Compared to Price	Quality of Marketing and Sales People	Product Reliability
All Systems 1985	6.8	6.8	6.3	7.1	5.9	4.1	3.4	5.2	5.9	7.7	7.7
1984	7.2	7.1	7.0	7.4	6.3	5.7	4.7	6.6	6.7	7.3	7.3
1983	6.8	6.6	6.6	7.5	5.8	5.3	4.6	6.1	6.3	7.4	7.4
1982	7.0	7.3	6.6	7.4	-	-	5.2	5.9	5.6	-	-
Large Systems	7.2	7.7	6.3	7.4	6.5	4.7	3.9	5.3	5.7	-	8.5
Small Systems	7.2	6.8	6.7	7.3	6.3	4.1	3.9	6.3	5.8	-	7.8
Peripherals and Terminals	6.9	6.6	5.9	7.2	5.4	4.1	2.7	4.9	5.7	-	7.9
Data Communications	7.7	7.7	6.7	7.8	6.7	4.8	3.3	5.9	6.3	-	8.0
Personal Computers	6.5	6.3	6.4	5.9	5.2	4.0	2.6	4.9	6.5	-	8.0
Word Processors	6.3	5.8	6.7	7.5	5.8	3.3	2.8	3.5	6.2	-	7.0
Workstations	7.4	7.0	7.5	7.6	7.0	4.7	4.3	4.3	6.2	-	7.2
Copiers	5.7	5.9	5.8	5.8	3.4	3.9	2.3	2.3	5.2	-	5.7
PBX	-	-	-	-	-	-	-	-	-	-	-
Systems Software	5.5	6.2	5.9	6.0	5.7	2.9	3.6	5.1	5.1	-	6.6
Applications Software	5.2	6.3	5.4	-	4.5	1.7	3.8	4.8	4.6	-	6.4

\*Rating: 1 = Poor, 5 = Average, 10 = Excellent.



# EXHIBIT VII-5

## SUMMARY OF ITALIAN USER RATINGS OF SERVICE QUALITY

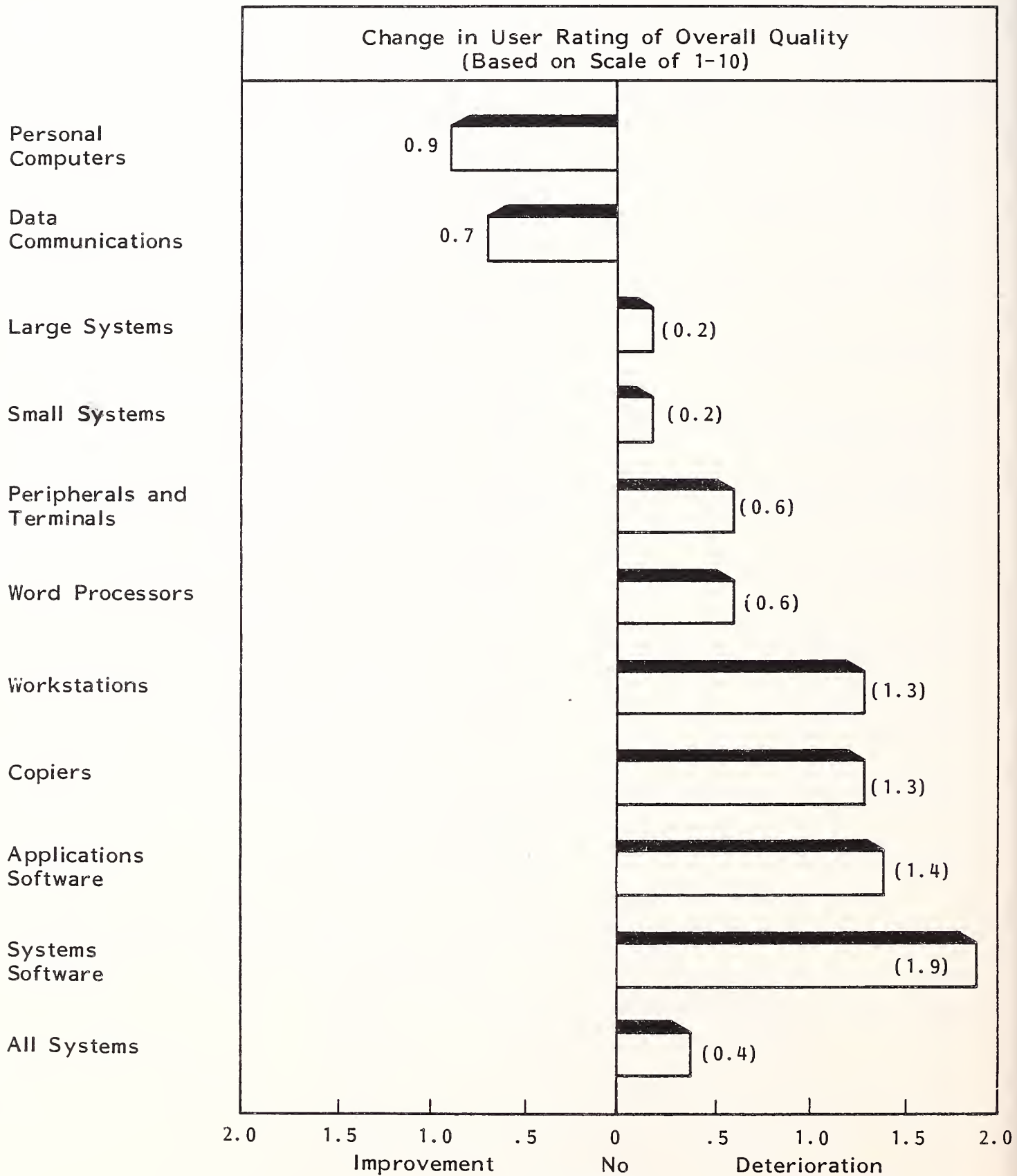


\*Rating: 1 = Poor, 5 = Average, 10 = Excellent.

Source: INPUT User Survey.

# EXHIBIT VII-6

## CHANGE IN OVERALL SERVICE QUALITY, 1984-1985 ITALY



- 132 -

## ITALIAN USERS' QUALITY-OF-SERVICE RATING

PRODUCT SEGMENT	OVERALL QUALITY OF SERVICE			QUALITY OF ENGINEERS			QUALITY OF SERVICE MANAGEMENT			AVAILABILITY OF SPARE PARTS			SOFTWARE SUPPORT CAPABILITY		
	1985	1984	1983	1985	1984	1983	1985	1984	1983	1985	1984	1983	1985	1984	1983
All Systems	6.8	7.2	6.8	6.8	7.1	6.8	6.3	7.0	6.6	7.1	7.4	7.5	5.9	6.3	5.8
Large Systems	7.2	7.4		7.7	7.3		6.3	7.1		7.4	7.6		6.5	6.7	
Small Systems	7.2	7.4		6.8	7.2		6.7	7.4		7.3	7.8		6.3	6.2	
Peripherals and Terminals	6.9	7.5		6.6	7.4		5.9	7.3		7.2	7.7		5.4	6.0	
Data Communications	7.7	7.0		7.7	6.9		6.7	6.8		7.8	6.7		6.7	5.6	
Personal Computers	6.5	5.6		6.3	5.7		6.4	5.7		5.9	7.0		5.2	6.5	
Word Processors	6.3	6.9		5.8	7.4		6.7	7.4		7.5	7.2		5.8	5.7	
Workstations	7.4	8.7		7.0	8.7		7.5	8.3		7.6	7.5		7.0	7.0	
Copiers	5.7	7.0		5.9	7.0		5.8	6.6		5.8	7.2		3.4	4.0	
PBX	-	7.5		-	7.5		-	7.0		-	7.0		-	7.0	
Systems Software	5.5	7.4		6.2	6.8		5.9	6.6		-	-		5.7	6.9	
Applications Software	5.2	6.6		6.3	6.0		5.4	6.0		-	-		4.5	6.7	

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: INPUT Survey

# EXHIBIT VII-7 (Cont.)

## ITALIAN USERS' QUALITY-OF-SERVICE RATING

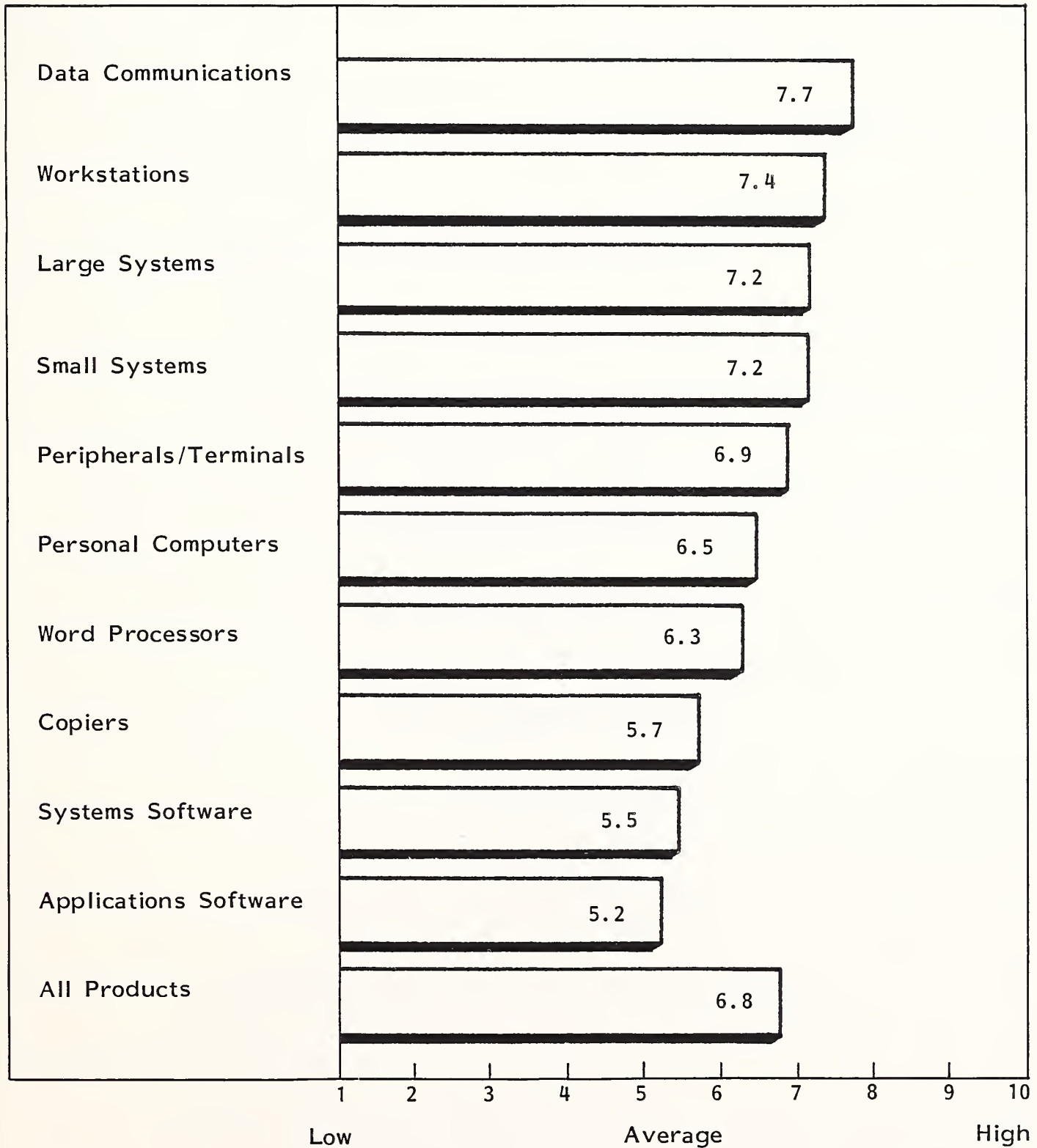
PRODUCT SEGMENT	PREVENTIVE MAINTENANCE EFFECTIVENESS			REMOTE DIAGNOSTICS			QUALITY OF INFORMATION & COMMUNICATIONS			VALUE OF SERVICE COMPARED TO PRICE			PRODUCT RELIABILITY		
	1985	1984	1983	1985	1984	1983	1985	1984	1983	1985	1984	1983	1985	1984	1983
All Systems	4.1	5.7	5.3	3.4	4.7	4.6	5.2	6.6	6.1	5.9	6.7	6.3	7.7	7.3	
Large Systems	4.7	6.9		3.9	6.6		5.3	7.1		5.7	6.9		8.5	7.9	
Small Systems	4.1	5.5		3.9	3.8		6.3	6.9		5.8	6.2		7.8	7.1	
Peripherals and Terminals	4.1	5.7		2.7	4.8		4.9	6.8		5.7	6.8		7.9	7.8	
Data Communications	4.8	4.6		3.3	4.1		5.9	5.8		6.3	6.4		8.0	6.7	
Personal Computers	4.0	4.0		2.6	4.0		4.9	5.2		6.5	5.5		8.0	7.2	
Word Processors	3.3	5.5		2.8	1.0		3.5	7.0		6.2	7.4		7.0	7.4	
Workstations	4.7	-		4.3	-		4.3	7.0		6.2	6.3		7.2	8.0	
Copiers	3.9	6.0		2.3	4.0		2.3	6.0		5.2	7.0		5.7	6.6	
PBX	-	-		-	-		-	7.5		-	7.5		-	7.0	
Systems Software	2.9	5.8		3.6	4.4		5.1	6.4		5.1	6.6		6.6	7.2	
Applications Software	1.7	5.5		3.8	2.0		4.8	5.5		4.6	6.4		6.4	6.7	

Rating: 1 = Poor, 5 = Average, 10 = Excellent

Source: INPUT Survey

## EXHIBIT VII-8

### OVERALL QUALITY OF SERVICE: PRODUCTS ITALY



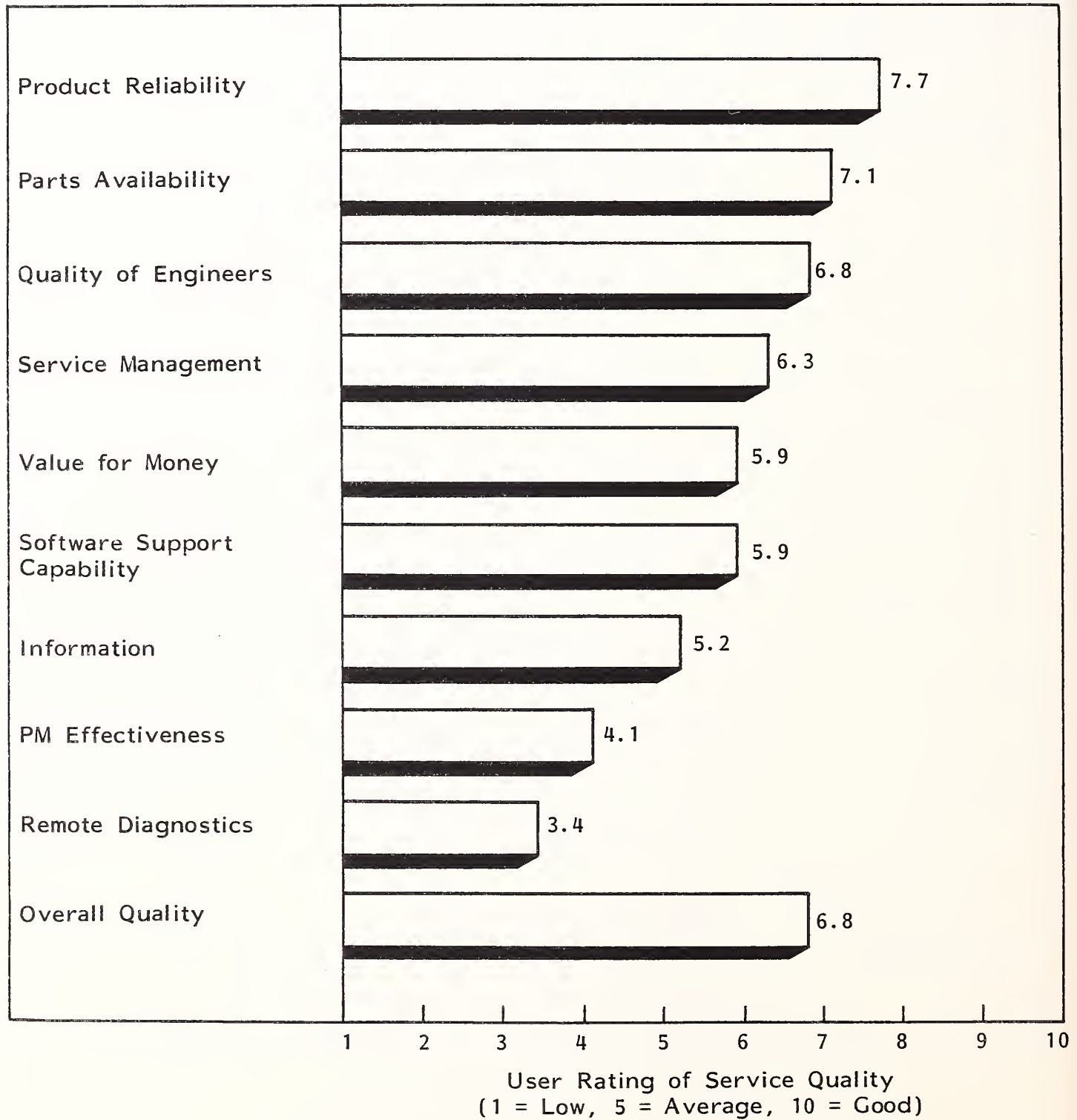
User Rating of Service Quality

- 135 -



## EXHIBIT VII-9

### OVERALL QUALITY OF SERVICE : SERVICE ELEMENTS ITALY





#### D. SYSTEM AVAILABILITY

- Exhibit VII-10 shows that taken across all products, system availability has hardly changed from 1983 to 1985. This disguises the fact that availability has declined significantly for large systems, but improved for small systems.
- The ideal, actual, threshold of pain, and performance comparisons are shown in Exhibits VII-11 through VII-14.

#### E. RESPONSE AND REPAIR TIMES

- Both response and repair times became shorter in 1985. By the same token, users' ideal requirements have become shorter, too.
- Response times average 8.8 hours against 12.8 hours in 1984. Response times are still poor compared to users' ideal requirements of 2.8 hours.
- Repair times average 6.8 hours against 19.3 hours in 1984. Users, however, still require ideal repair times of 1.8 hours or, at worst, 3.1 hours.
- The product categories in which response times improved considerably in 1985 are:
  - Small systems (5.9 hours against 10.0 in 1984).
  - Peripherals and terminals (8.2 hours against 14.7 in 1984).
- Most product categories have a response time within the users' maximum acceptable times with the exception of personal computers and copiers.

# EXHIBIT VII-10

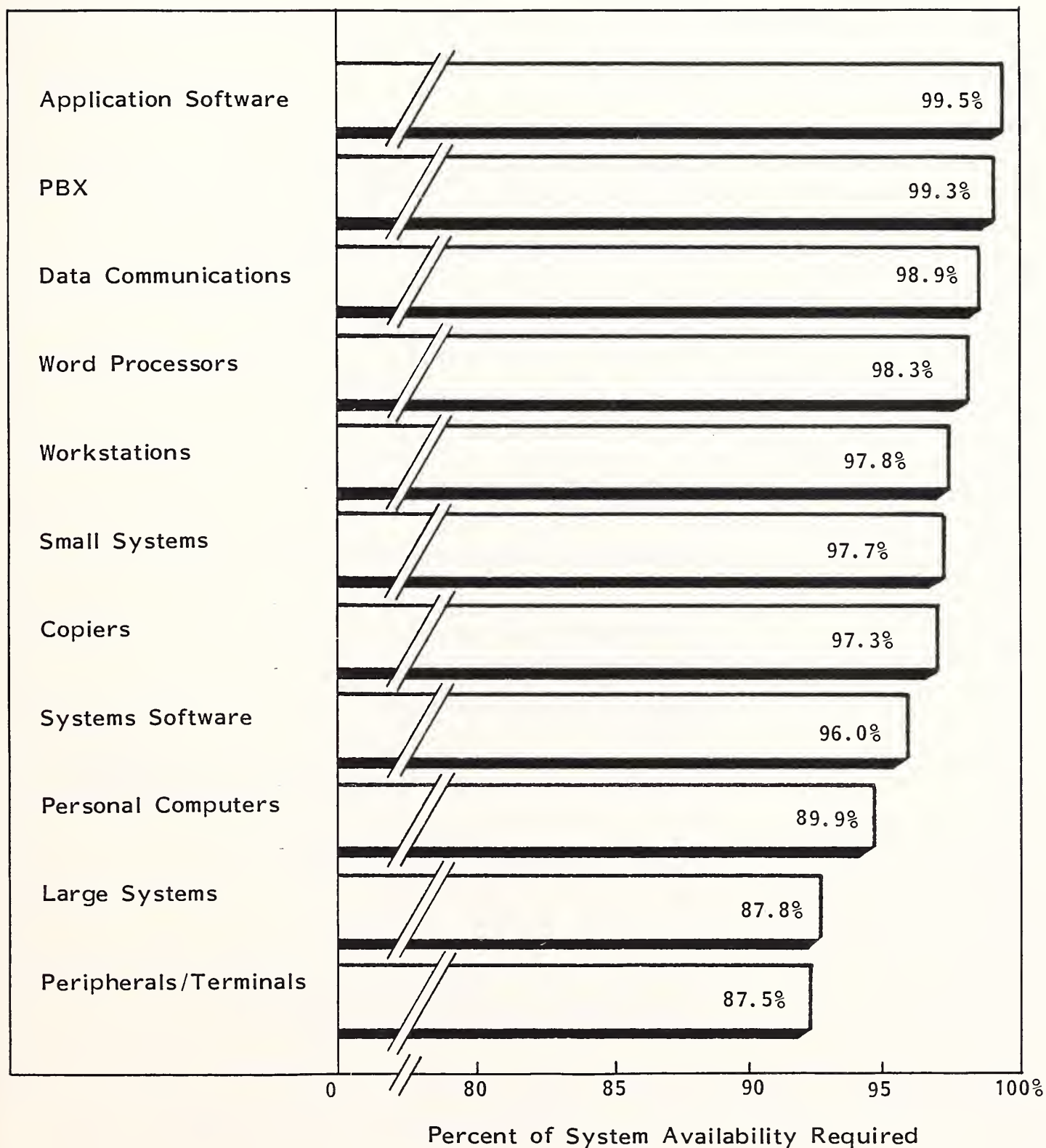
## ITALIAN RESPONDENTS' VIEW OF SYSTEM AVAILABILITY

LEVELS OF SYSTEM AVAILABILITY			Systemst						Office Productst					Softwaret		
			Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Personal Computers	Word Processors	Workstations	PBX	Copiers	Systems	Applications	All Systems in Italy		
<u>1985</u>																
Current	82.0	90.9	81.3	94.1	85.2	93.0	92.4	94.5	88.0	90.0	95.2	87.4				
Ideal	87.7	97.7	87.5	98.9	89.8	98.3	97.8	99.3	97.3	96.0	99.5	93.4				
T.O.P.*	78.5	90.3	77.0	90.9	82.7	90.2	95.6	99.0	90.0	87.4	94.2	85.3				
<u>1984</u>																
Current	90.1	81.4	84.8	92.7	78.0	92.0	92.2	97.4	84.2	93.7	91.9	87.7				
Ideal	95.1	85.4	91.9	98.0	86.0	85.0	74.0	99.0	94.5	97.4	97.5	92.1				
T.O.P.*	89.3	80.2	86.5	92.3	82.0	85.0	79.8	97.4	86.0	93.2	94.8	87.4				
<u>1983</u>																
Current	89.0	86.9	88.4	84.1	85.0	90.2	-	98.6	73.3	91.2	90.0	87.9				
Ideal	95.7	95.1	95.2	92.2	92.1	97.7	-	99.6	96.0	97.3	98.8	95.5				
T.O.P.*	86.6	80.9	85.1	83.6	85.4	89.6	-	97.5	76.7	84.3	90.8	84.8				

\*T.O.P. = Threshold of Pain (Maximum Time Acceptable to User).

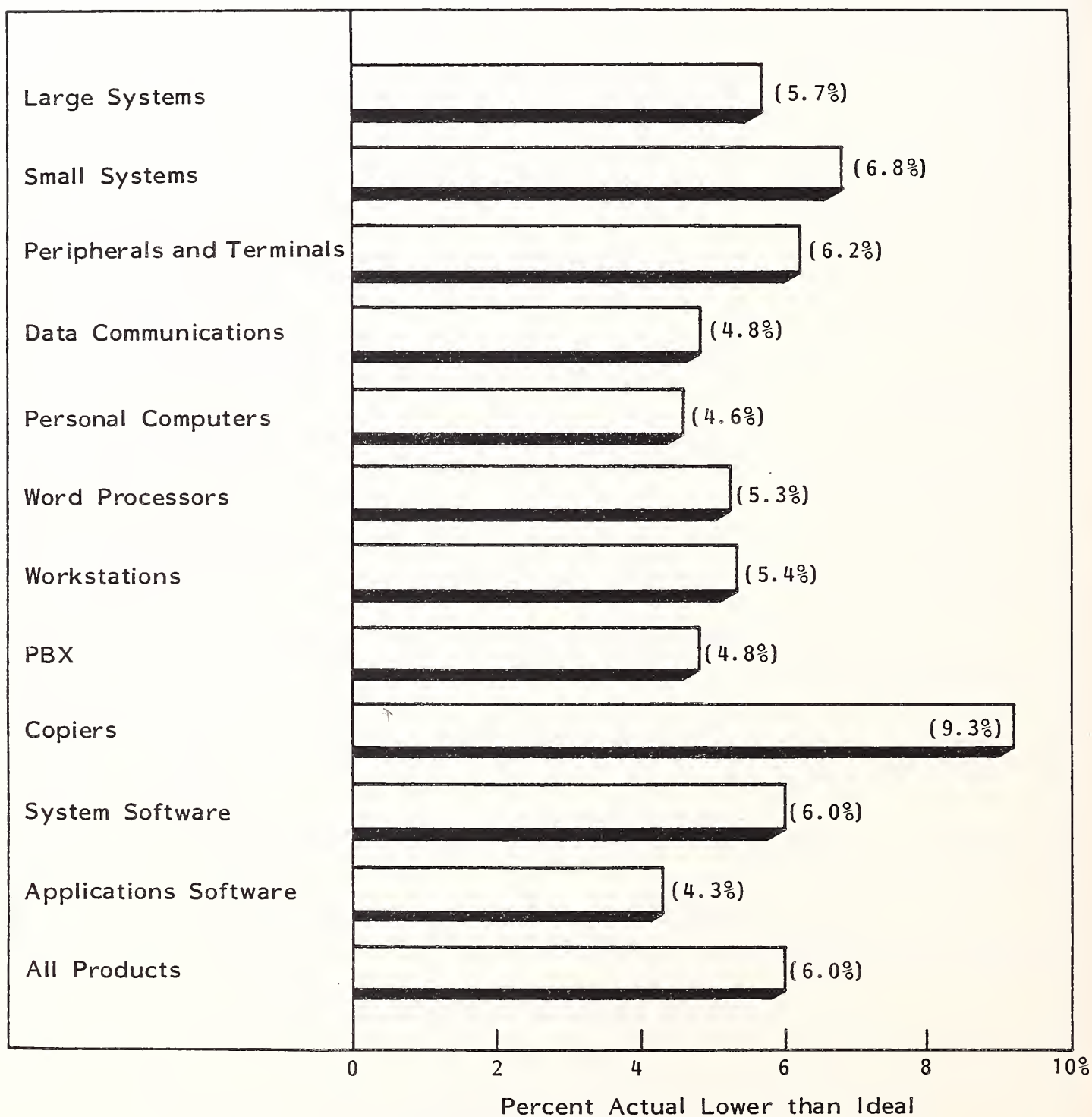
† Percent of Available Time

Source: INPUT Survey.

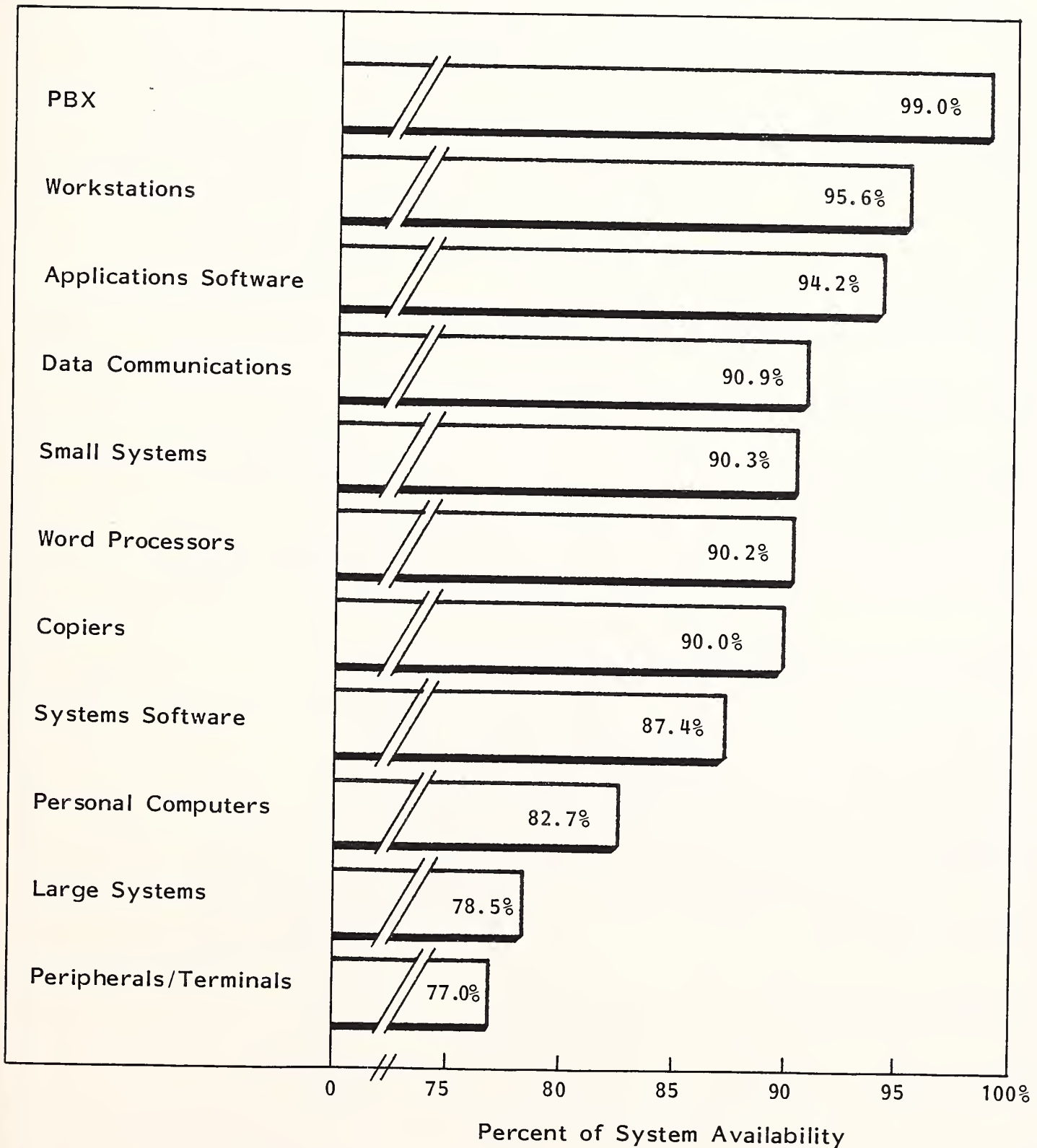
SYSTEM AVAILABILITY: USER IDEAL REQUIREMENT  
ITALY

# EXHIBIT VII-12

## SYSTEM AVAILABILITY: ACTUAL COMPARED TO IDEAL ITALY

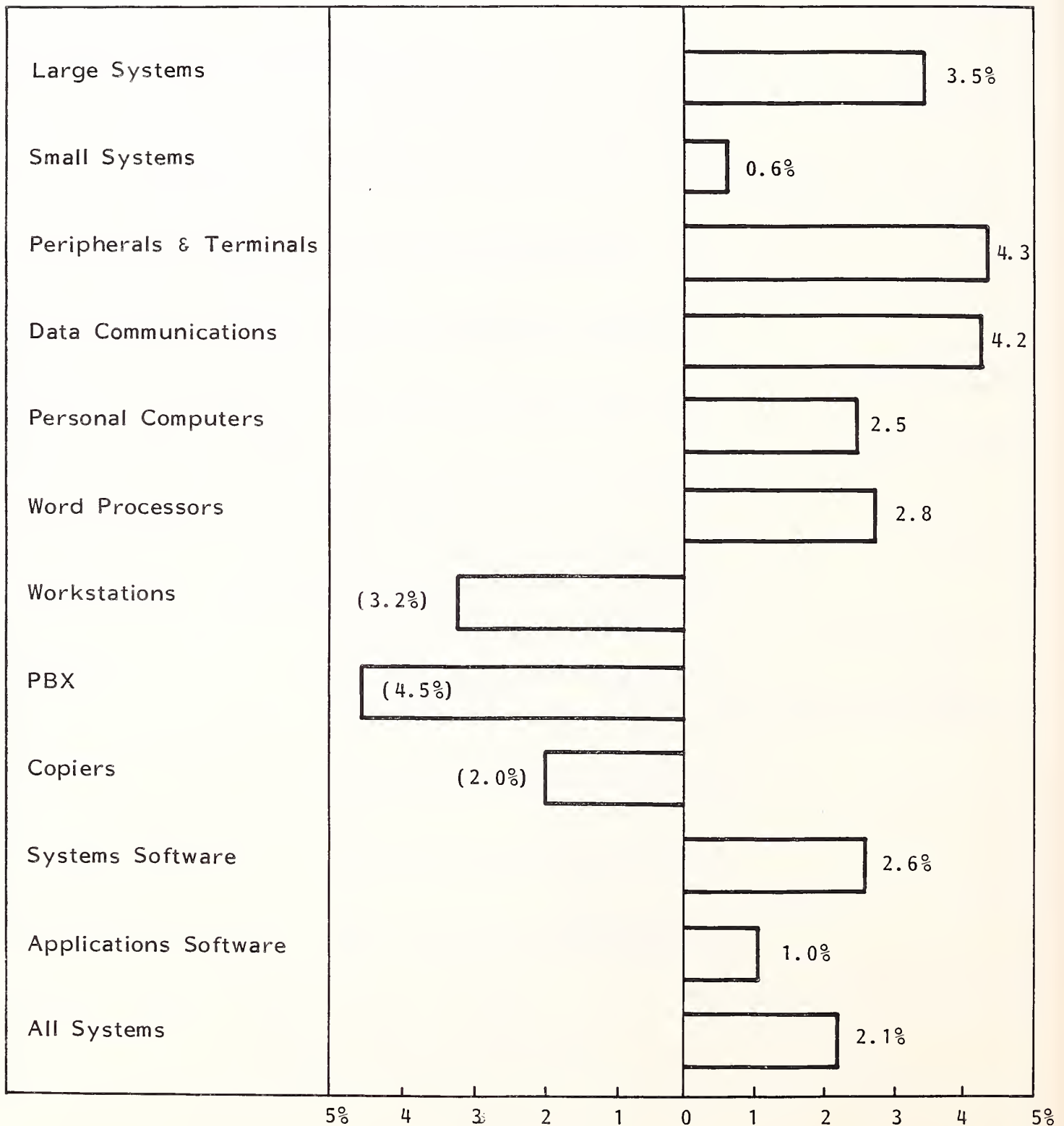




SYSTEM AVAILABILITY: USER THRESHOLD OF PAIN  
ITALY

# EXHIBIT VII-14

## SYSTEM AVAILABILITY: ACTUAL COMPARED TO LOWEST ACCEPTABLE LEVEL ITALY





- In all product categories, turnaround times are above users' acceptable levels.
- Exhibits VII-15 and VII-16 summarise the position.

#### F. COMPLAINTS ABOUT SERVICE

- Italian users have widely differing views about the worst features of service, as can be seen on Exhibit VII-17. Software service, however, is the most common feature highlighted.
- In terms of annoyance with service, cost is, as all so often, the most annoying aspect. One user in five mentions cost as the problem.

#### G. PRICING ISSUES

- Exhibit VII-18 shows that users were faced with much higher price increases in 1984 than they had been expecting.
- Perhaps optimisitcally, they are expecting the general upward trend to have reversed itself in 1985.
- Most users, as can be seen in Exhibit VII-19, are prepared to pay a premium for improved service, although their premium level would have to be low, as Exhibit VII-20 demonstrates. With high levels of annual price increase, it must be expected their users would pay only modest premiums for these additional services.

## EXHIBIT VII-15

## ITALIAN RESPONDENTS' VIEW OF RESPONSE AND REPAIR TIMES, 1985

PRODUCT CLASSIFICATION	RESPONSE TIME (Hours)			REPAIR TIME (Hours)		
	CURRENTLY RECEIVE	IDEAL	T.O.P.*	CURRENTLY RECEIVE	IDEAL	T.O.P.*
<u>Systems</u>						
Large Systems	5.8	2.1	5.6	3.8	1.5	3.0
Small Systems	5.9	2.0	7.7	3.2	1.3	2.8
Peripherals and Terminals	8.2	3.2	8.8	3.0	1.4	2.9
Data Communications	4.6	2.4	7.3	3.7	1.0	1.9
<u>Office Products</u>						
Personal Computers	16.8	4.9	11.8	8.8	1.7	2.8
Word Processors	13.4	3.6	20.4	11.2	0.6	2.3
Workstations	2.8	1.0	2.0	1.5	0.4	1.5
PBX	-	-	-	-	-	-
Copiers	14.0	3.3	7.1	3.3	1.4	2.6
<u>Software</u>						
Systems	10.5	2.1	11.4	18.4	4.5	5.3
Applications	16.3	3.2	17.1	28.0	8.0	9.0
All Systems in Italy	8.8	2.8	8.9	6.0	1.8	3.1

\* T.O.P. = Threshold of Pain (Maximum Time Acceptable to User).

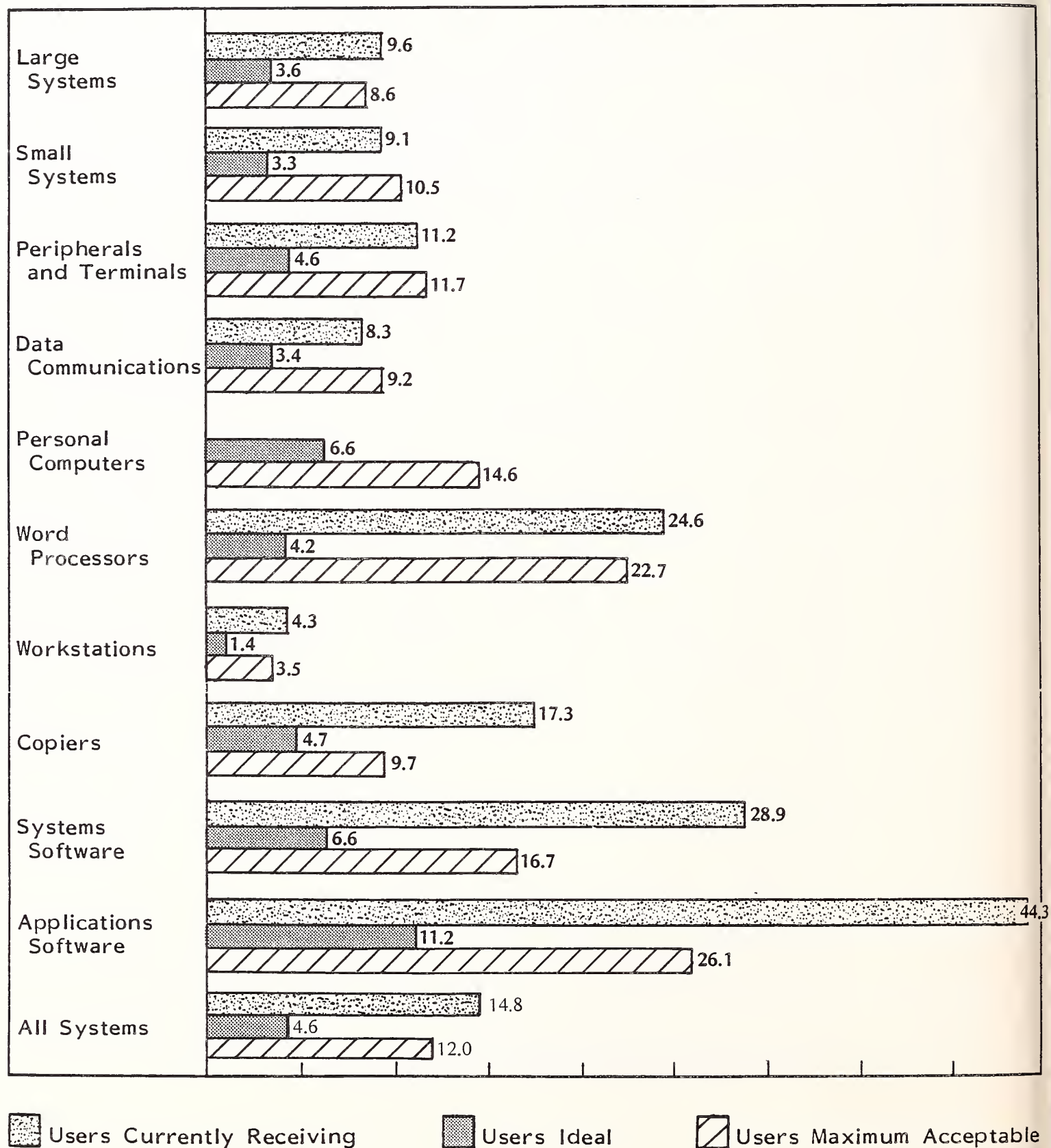
## EXHIBIT VII-15 (Cont.)

## ITALIAN RESPONDENTS' VIEW OF RESPONSE AND REPAIR TIMES, 1985

PRODUCT CLASSIFICATION	TOTAL RESPONSE AND REPAIR TIME (Hours)		
	CURRENTLY RECEIVE	IDEAL	T.O.P.*
<u>Systems</u>			
Large Systems	9.6	3.6	8.6
Small Systems	9.1	3.3	10.5
Peripherals and Terminals	11.2	4.6	11.7
Data Communications	8.3	3.4	9.2
<u>Office Products</u>			
Personal Computers	25.6	6.6	14.6
Word Processors	24.6	4.2	22.7
Workstations	4.3	1.4	3.5
PBX	-	-	-
Copiers	17.3	4.7	9.7
<u>Software</u>			
Systems	28.9	6.6	16.7
Applications	44.3	11.2	26.1
All Systems in Italy	14.8	4.6	12.0

\*T.O.P. = Threshold of Pain (Maximum Time Acceptable to User).

TOTAL RESPONSE/REPAIR TIME - ITALIAN USER NEED AND VENDOR PERFORMANCE  
(Time in Hours)

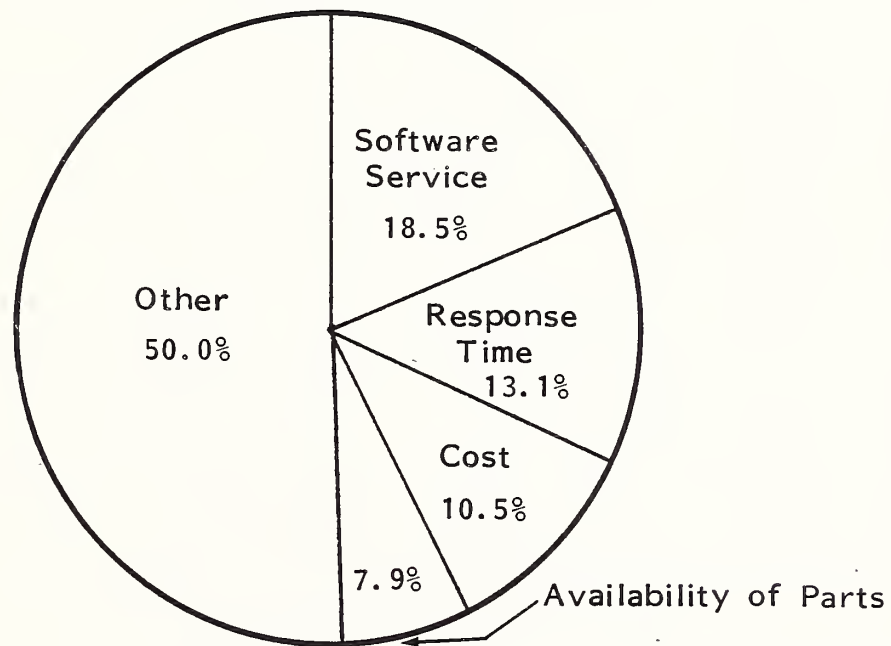


Source: INPUT Survey

EXHIBIT VII-17

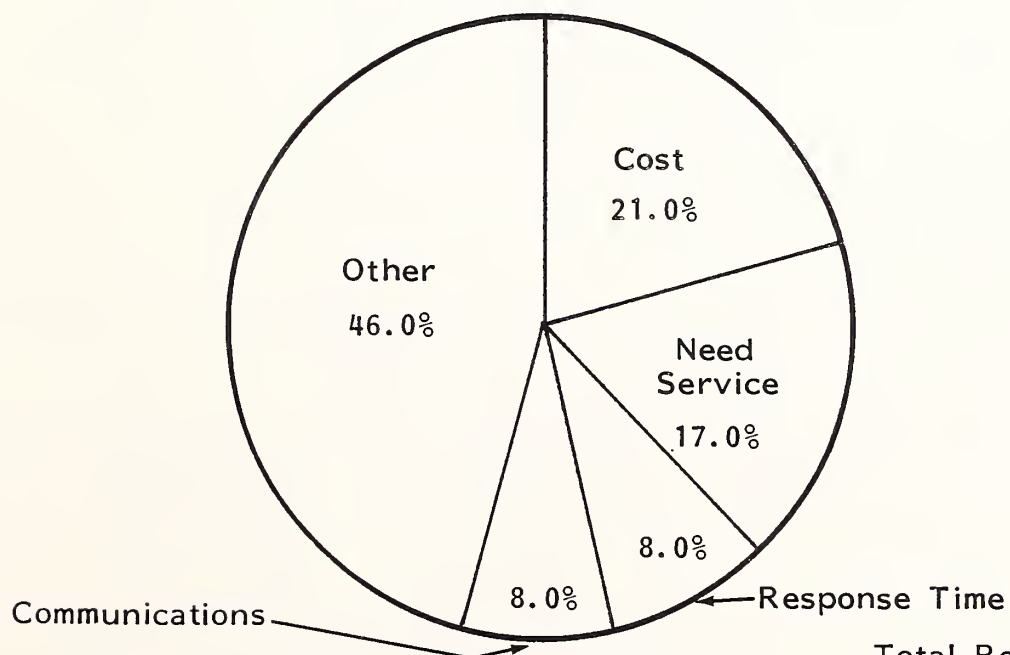
ITALIAN RESPONDENTS' COMPLAINTS ABOUT SERVICE

A. Worst Features



Total Responses: 36

B. Annoyance with Service



Total Responses: 24



# EXHIBIT VII-18

## ITALIAN RESPONDENTS' VIEW OF MAINTENANCE PRICING INCREASES

MAINTENANCE PRICE INCREASES		Systemst						Office Productst					Software†	
		Systemst			Office Productst			Office Productst					Software†	
		Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Personal Computers	Word Processors	Workstations	PBX	Copiers	Systems	Applications	All Systems in Italy	
<u>1985</u>														
Received 1984	15.7%	11.7%	16.0%	12.1%	8.3%	10.0%	11.8%			8.7%	14.1%	14.3%	13.4%	
Expected 1985	10.7	8.3	10.2	9.6	8.7	10.0	11.0			9.1	11.8	9.3	9.9	
T.O.P.* 1985	13.7	11.9	11.9	14.0	10.7	12.8	14.0			12.4	14.7	12.5	12.8	
<u>1984</u>														
Received 1983	-	-	-	-	-	-	-			-	-	-	-	
Expected 1984	10.3	10.3	9.1	10.6	8.0	8.8	6.7			9.0	8.8	8.0	8.3	
T.O.P.* 1984	13.3	15.7	13.6	15.4	20.2	9.7	8.3			9.6	10.9	10.0	13.3	
<u>1983</u>														
Received 1982	12.5	10.8	12.4	10.1	12.5	10.0	-			10.0	12.9	7.5	11.5	
Expected 1983	13.6	11.7	13.2	11.8	12.3	10.4	-			11.7	13.2	9.8	12.4	
T.O.P.* 1983	19.2	17.0	17.5	17.9	19.4	17.9	-			15.0	17.4	16.8	17.9	

\*T.O.P. = Threshold of Pain (Maximum Time Acceptable to User).

†Percent Price Increase

Source: INPUT Survey.



# EXHIBIT VII-19

## PERCENTAGE OF ITALIAN RESPONDENTS WHO ARE WILLING TO PAY FOR EXTRA/IMPROVED SERVICE

TYPE OF EXTRA/IMPROVED SERVICE	SYSTEMS						OFFICE PRODUCTS				SOFTWARE	
	SYSTEMS						OFFICE PRODUCTS				SOFTWARE	
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Personal Computers	Word Processors	Workstations	PBX	Copiers	Systems	Applications	
Guaranteed Up-time	92%	96%	84%	70%	76%	57%	80%	-	73%	35%	33%	
Guaranteed Response Time	92	100	81	70	71	57	80	-	73	39	33	
Guaranteed Turnaround Time on Software	84	85	62	53	57	57	60	-	46	48	50	
Software Consulting From Servicer	80	81	65	53	57	57	60	-	46	39	42	
Software Enhancements From Servicer	84	85	68	53	57	57	60	-	46	44	50	
Personalised Service	80	92	68	57	57	57	60	-	46	30	33	

Source: INPUT 1985 User Survey

# EXHIBIT VII-20

PERCENT ABOVE BASE THAT ITALIAN RESPONDENTS  
WOULD BE WILLING TO PAY FOR EXTRA/IMPROVED SERVICE

TYPE OF EXTRA/IMPROVED SERVICE	SYSTEMS						OFFICE PRODUCTS					SOFTWARE	
	SYSTEMS						OFFICE PRODUCTS					SOFTWARE	
	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Personal Computers	Word Processors	Workstations	PBX	Copiers	Systems	Applications	ALL SYSTEMS IN ITALY	
Guaranteed Up-time	5.4%	7.2%	6.8%	4.0%	4.2%	6.3%	4.3%	-	5.5%	9.0%	7.5%	6.1%	
Guaranteed Response Time	6.3	8.4	7.2	5.8	4.3	6.3	4.3	-	4.5	8.0	7.5	6.7	
Guaranteed Turnaround Time on Software	3.4	8.2	5.2	2.2	3.3	5.0	5.0	-	5.0	8.2	7.5	5.4	
Software Consulting From Servicer	4.1	9.6	5.7	2.2	4.2	5.0	5.0	-	5.0	5.9	8.4	5.9	
Software Enhancements From Servicer	4.5	11.1	7.0	2.8	4.6	6.3	5.0	-	6.0	7.3	9.5	6.8	
Personalised Service	6.0	5.3	5.0	4.0	4.2	5.0	5.0	-	5.8	7.1	8.8	5.4	

Source: INPUT 1985 User Survey

VIII BENELUX



## VIII BENELUX

### A. INTRODUCTION

- The Benelux user data is derived from 26 responses, evenly divided between the Netherlands and Belgium. The hardware used by those respondents is shown in Exhibit VIII-1.

### B. IMPORTANCE OF SERVICE

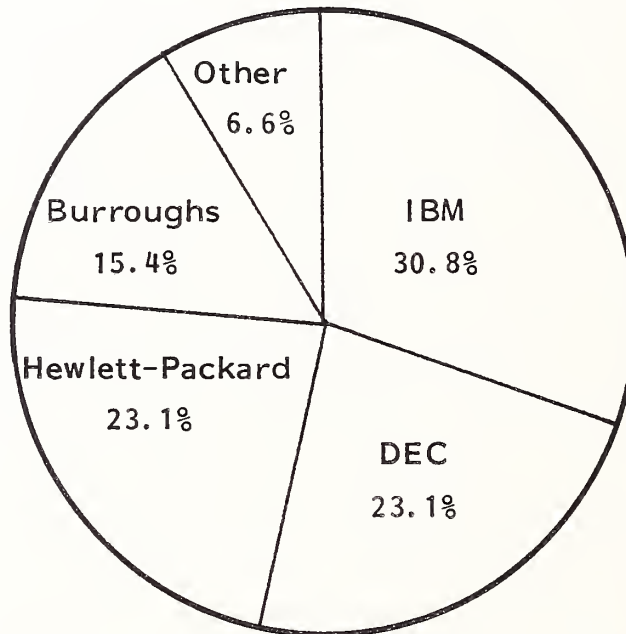
- As can be seen in Exhibit VIII-2, system reliability is the most important factor for users, followed closely by response time.
- Price, as with many other countries, appears to be of only secondary importance, as does remote diagnostics and the provision of up-time guarantees.

### C. QUALITY OF SERVICE

- Overall quality of service, as perceived by the user, has changed little over the period 1983-1985 and remains adequate but not exceptional, rating 7 on a 1-10 scale. A number of individual service areas do show some deterioration since 1984, however:

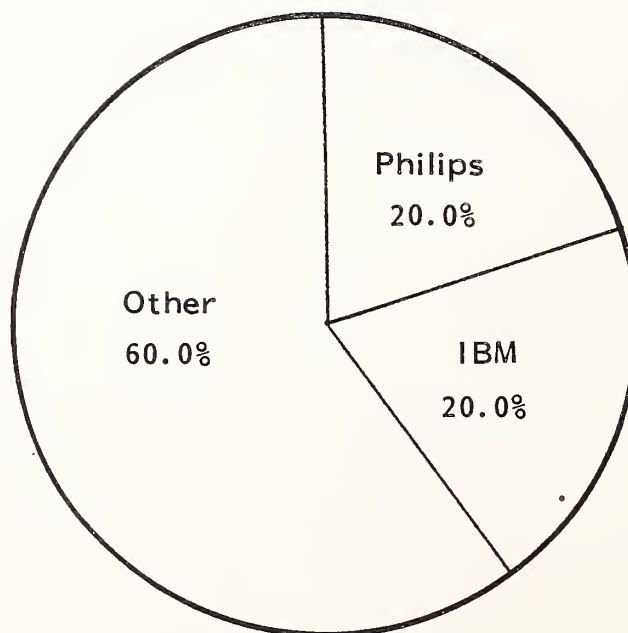
EXHIBIT VIII-1

BENELUX RESPONDENTS' INSTALLED EQUIPMENT  
(Percent Using)



Large Systems

Sample Size: 13



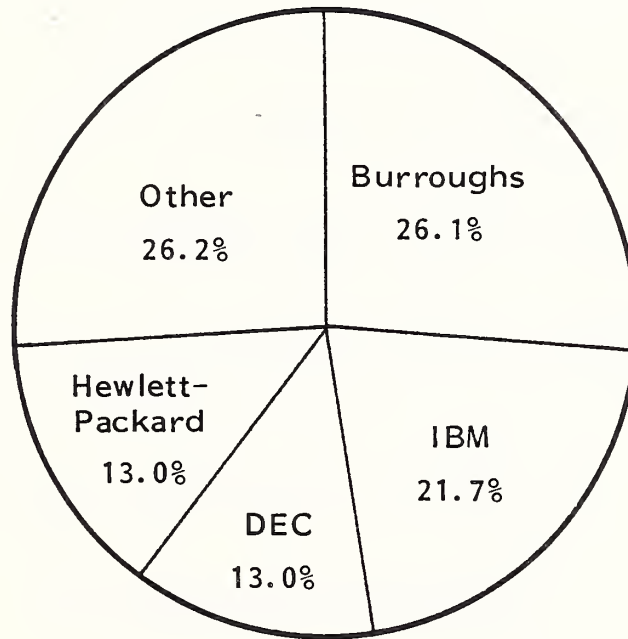
Small Systems

Sample Size: 10

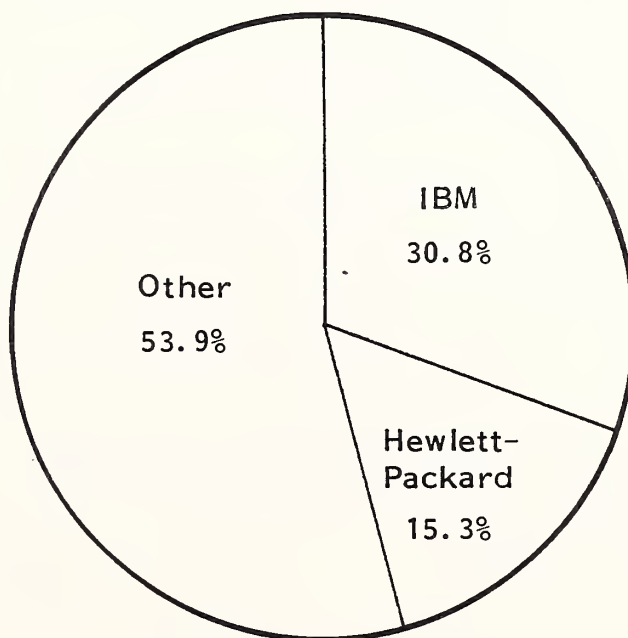


EXHIBIT VIII-1 (Cont.)

BENELUX RESPONDENTS' INSTALLED EQUIPMENT  
(Percent Using)



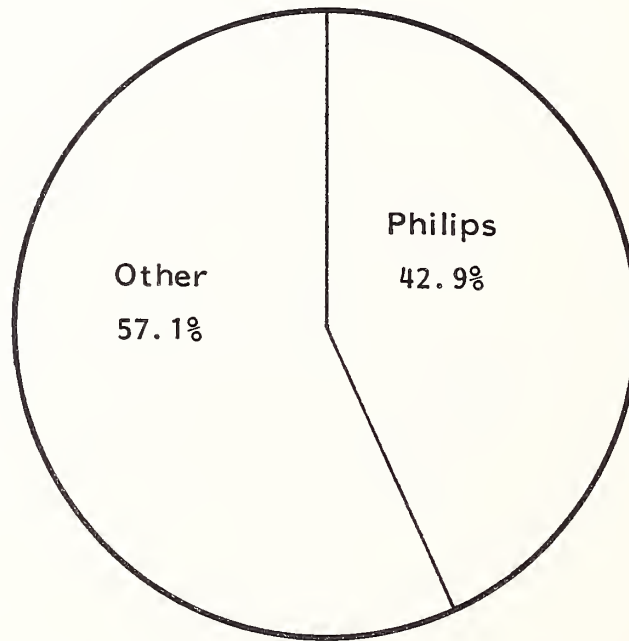
Peripherals and Terminals      Sample Size: 23



Personal Computers      Sample Size: 13

EXHIBIT VIII-1 (Cont.)

BENELUX RESPONDENTS' INSTALLED EQUIPMENT  
(Percent Using)

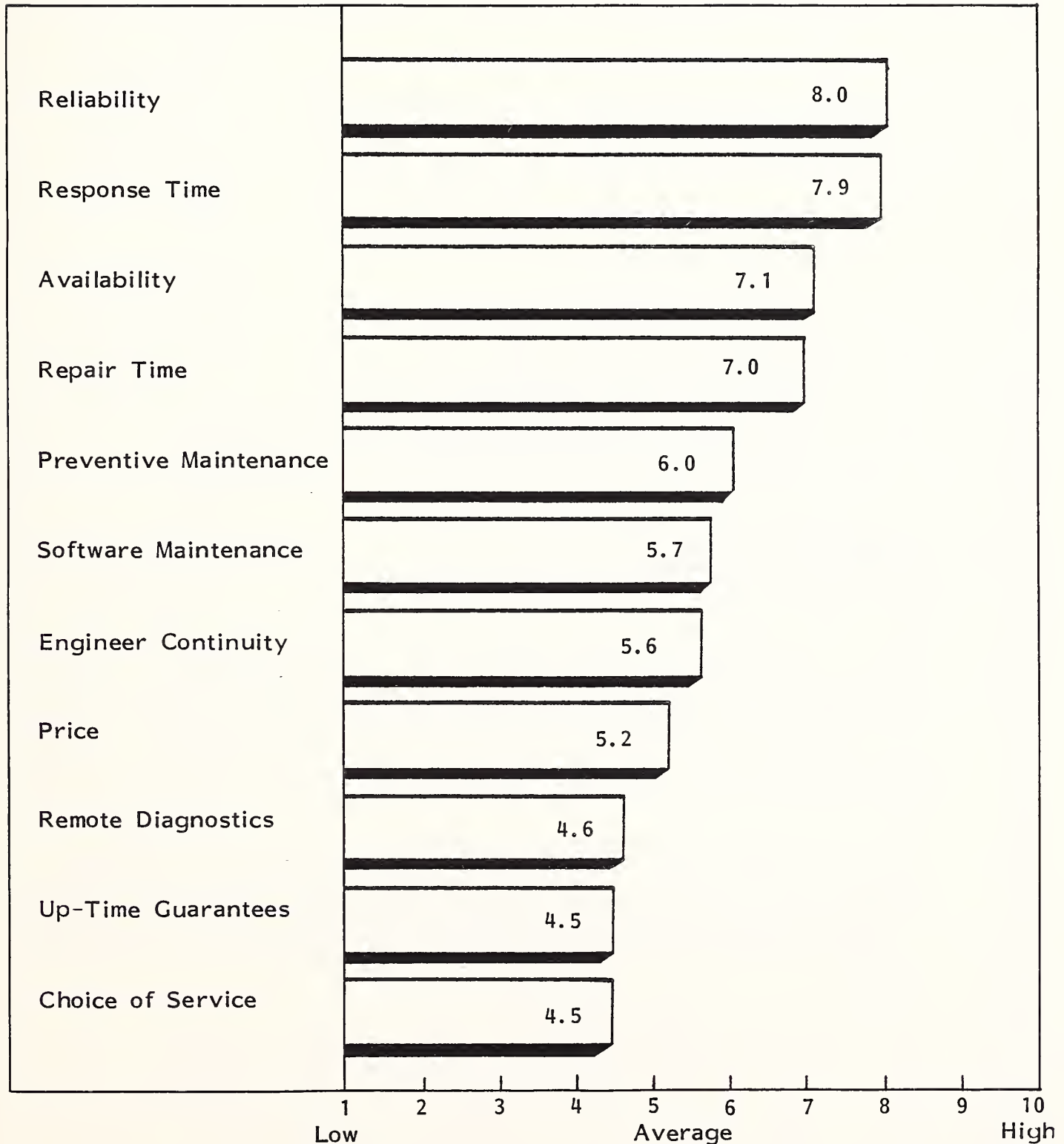


Word Processors

Sample Size: 7

# EXHIBIT VIII-2

## RELATIVE IMPORTANCE OF SERVICE FACTORS: BENELUX (Average Ranking)



Average Ranking of Importance

- Quality of engineers.
  - Quality of service management.
  - Parts availability.
  - Software support capability.
  - Preventive maintenance effectiveness.
  - Product reliability.
- Few elements show an improvement.
  - The quality position is summarised in Exhibits VIII-3 through VIII-5.

#### D. SYSTEM AVAILABILITY

- Users would ideally like availability levels ranging around 99%, as can be seen in Exhibit VIII-6. Unfortunately, as demonstrated on Exhibit VIII-7, they are not receiving this level, particularly not so for small systems and word processors.
  - Even the Benelux users' 'threshold of pain'; i.e., the lowest level of availability acceptable, is high, as shown in Exhibit VIII-8, and, as Exhibit VIII-9 shows, vendors are failing to provide even that minimum level in a number of product areas.
- Peripherals and terminals.

## BENELUX USERS' QUALITY-OF-SERVICE RATING

PRODUCT SEGMENT	OVERALL QUALITY OF SERVICE			QUALITY OF ENGINEERS			QUALITY OF SERVICE MANAGEMENT			AVAILABILITY OF SPARE PARTS			SOFTWARE SUPPORT CAPABILITY		
	1985	1984	1983	1985	1984	1983	1985	1984	1983	1985	1984	1983	1985	1984	1983
All Systems	7.0	7.1	7.0	7.3	7.8	7.2	6.2	7.4	6.9	7.1	8.0	7.3	5.5	7.0	6.2
Large Systems	7.9	7.4		7.8	8.2		7.5	7.8		7.5	8.1		5.8	7.4	
Small Systems	7.4	7.8		7.6	8.1		5.9	7.9		7.8	8.6		6.6	5.7	
Peripherals and Terminals	7.8	7.6		8.8	8.4		7.6	7.9		9.2	8.1		7.3	8.1	
Data Communications	7.0	7.8		7.3	8.8		5.3	8.8		7.3	8.8		5.3	8.8	
Personal Computers	4.7	5.8		5.5	6.2		4.7	5.6		5.5	7.2		3.5	4.0	
Word Processors	6.2	6.5		6.6	7.1		4.3	6.5		6.2	7.8		3.0	6.2	
Workstations	8.5	6.8		8.0	9.2		7.0	8.2		5.0	6.2		1.0	9.5	
Copiers	-			-			-			-			-		
PBX	-			-			-			-			-		
Systems Software	6.0	6.4		7.0	7.1		6.1	6.5		6.9			6.4	7.1	
Applications Software	-			-			-			-			-		

Rating: 1 = Poor, 5 = Average, 10 = Excellent

SOURCE: INPUT Survey

# EXHIBIT VIII-3 (Cont.)

## BENELUX USERS' QUALITY-OF-SERVICE RATING

PRODUCT SEGMENT	PREVENTIVE MAINTENANCE EFFECTIVENESS			REMOTE DIAGNOSTICS			QUALITY OF INFORMATION & COMMUNICATIONS			VALUE OF SERVICE COMPARED TO PRICE			PRODUCT RELIABILITY		
	1985	1984	1983	1985	1984	1983	1985	1984	1983	1985	1984	1983	1985	1984	1983
All Systems	5.2	6.7	6.0	5.1	4.4	5.0	6.0	6.4	6.3	6.3	6.2	6.1	7.5	8.0	7.7
Large Systems	6.3	7.0		5.2	4.2		6.4	6.8		7.2	6.5		8.5	8.4	
Small Systems	5.3	7.2		3.8	3.8		7.4	5.6		6.3	6.1		8.1	8.4	
Peripherals and Terminals	7.6	7.3		6.5	4.2		7.6	7.1		7.0	6.6		7.0	8.2	
Data Communications	1.3	6.8		3.0	4.8		4.3	7.4		6.0	7.1		8.3	8.8	
Personal Computers	3.8	5.0		7.0	6.0		4.0	5.2		4.0	5.0		6.8	7.2	
Word Processors	3.3	6.5		2.5	6.5		4.8	6.1		4.8	5.7		7.2	7.4	
Workstations	2.0	6.3		3.0	4.5		4.0	7.5		7.0	6.0		8.5	9.0	
Copiers	-	4.0		-	1.0		-	1.5		-	5.0		-	4.5	
PBX	-	7.0		-	-		-	2.0		-	-		-	5.5	
Systems Software	6.2	5.3		7.0	5.2		6.5	6.3		7.2	5.8		5.0	7.8	
Applications Software	-	5.0		-	4.0		-	-		-	5.7		-	7.3	

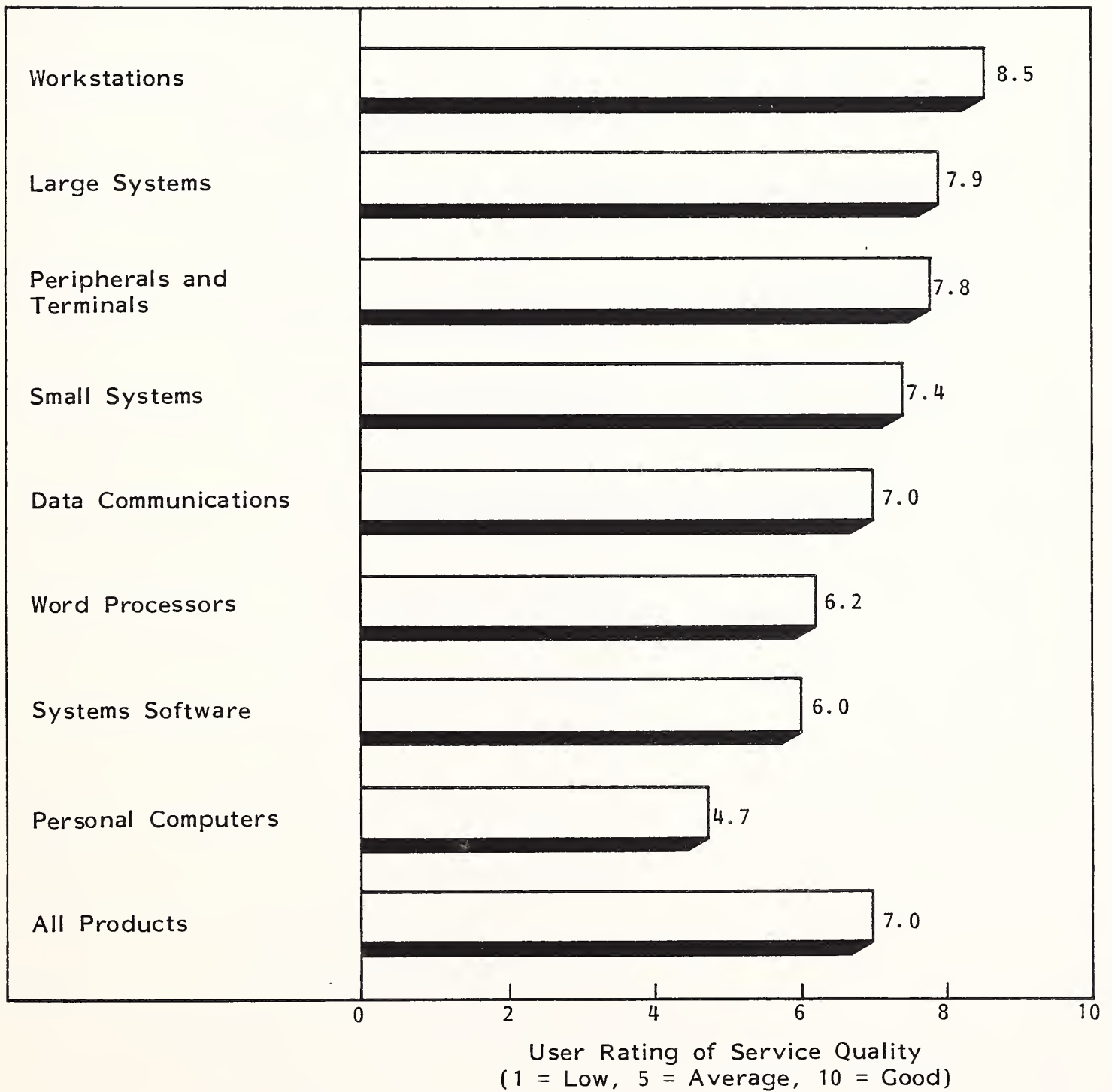
Rating: 1 = Poor, 5 = Average, 10 = Excellent

Source: INPUT Survey



EXHIBIT VIII-4

OVERALL QUALITY OF SERVICE: PRODUCTS  
BENELUX



# EXHIBIT VIII-5

## OVERALL QUALITY OF SERVICE: SERVICE ELEMENTS BENELUX

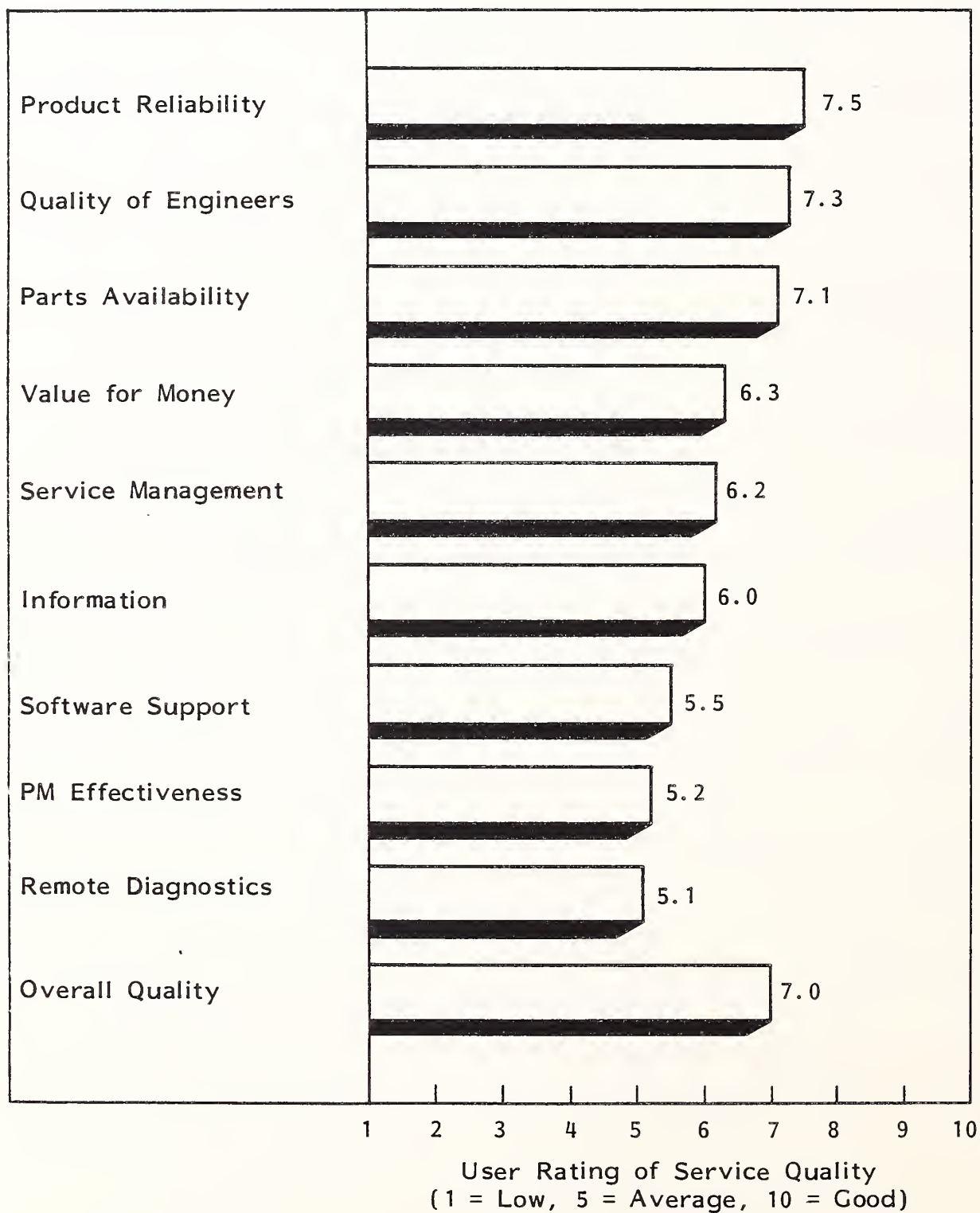


EXHIBIT VIII-6

SYSTEM AVAILABILITY: USER IDEAL REQUIREMENT  
BENELUX

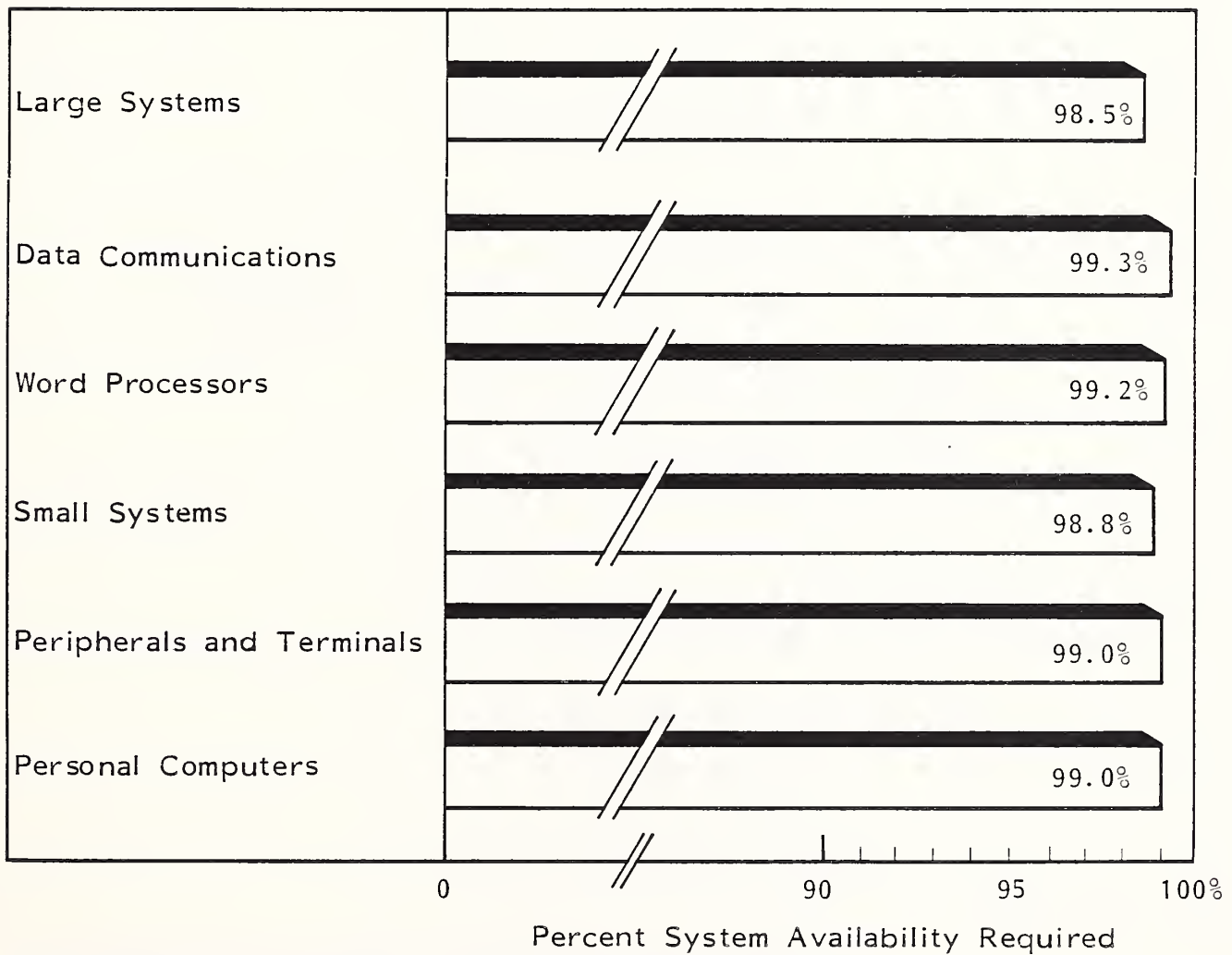


EXHIBIT VIII-7

SYSTEM AVAILABILITY: ACTUAL COMPARED TO IDEAL  
BENELUX

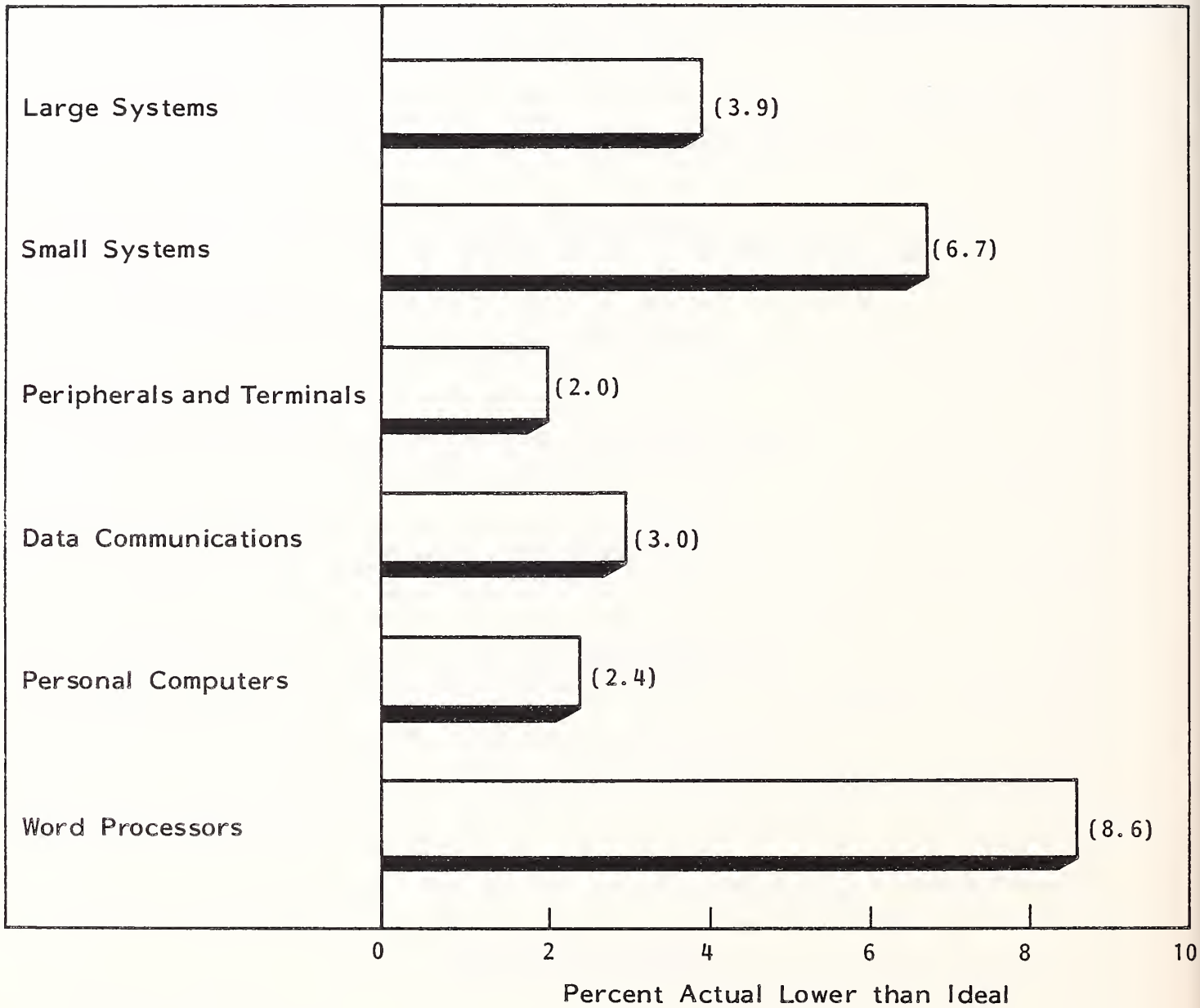
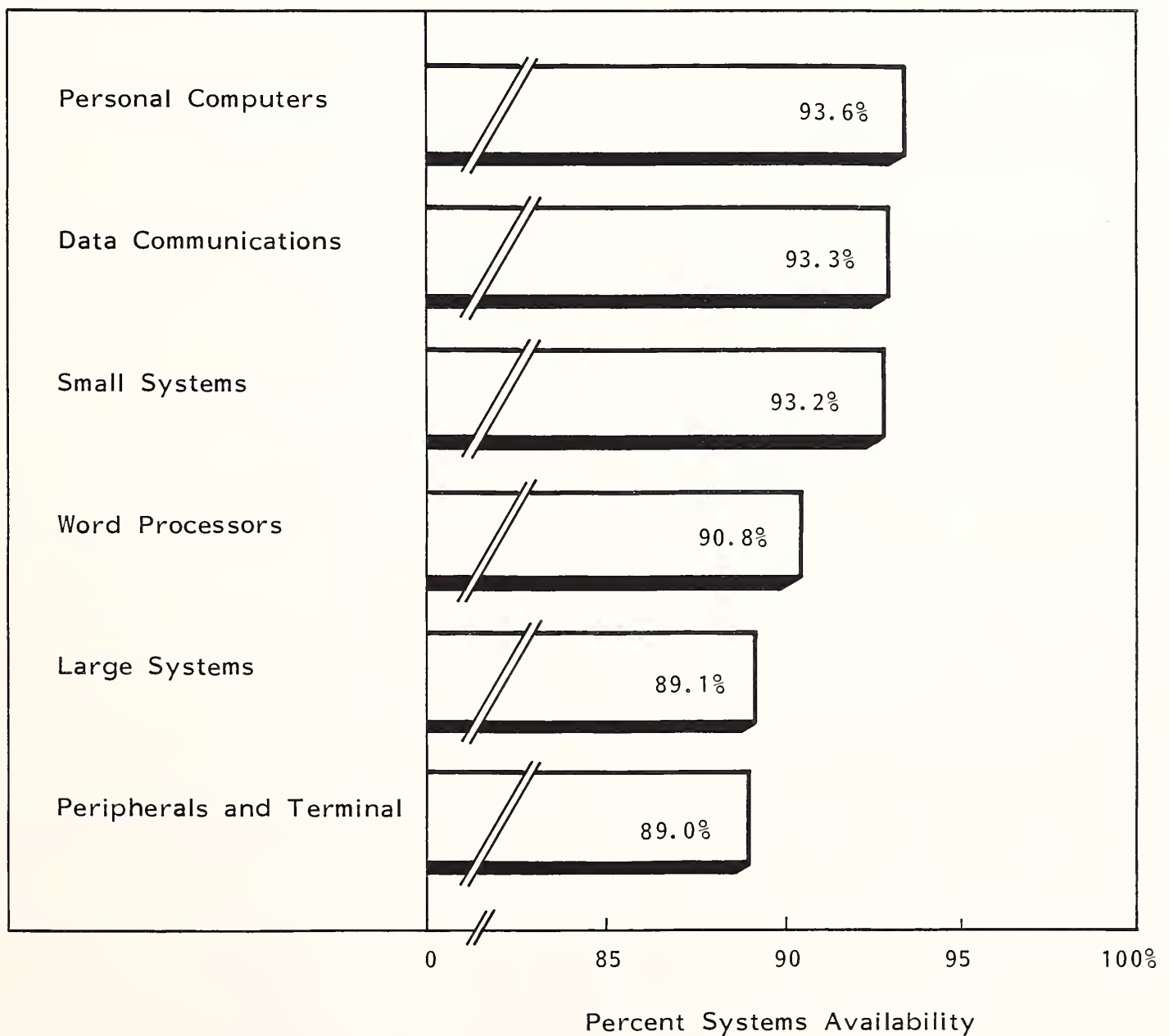


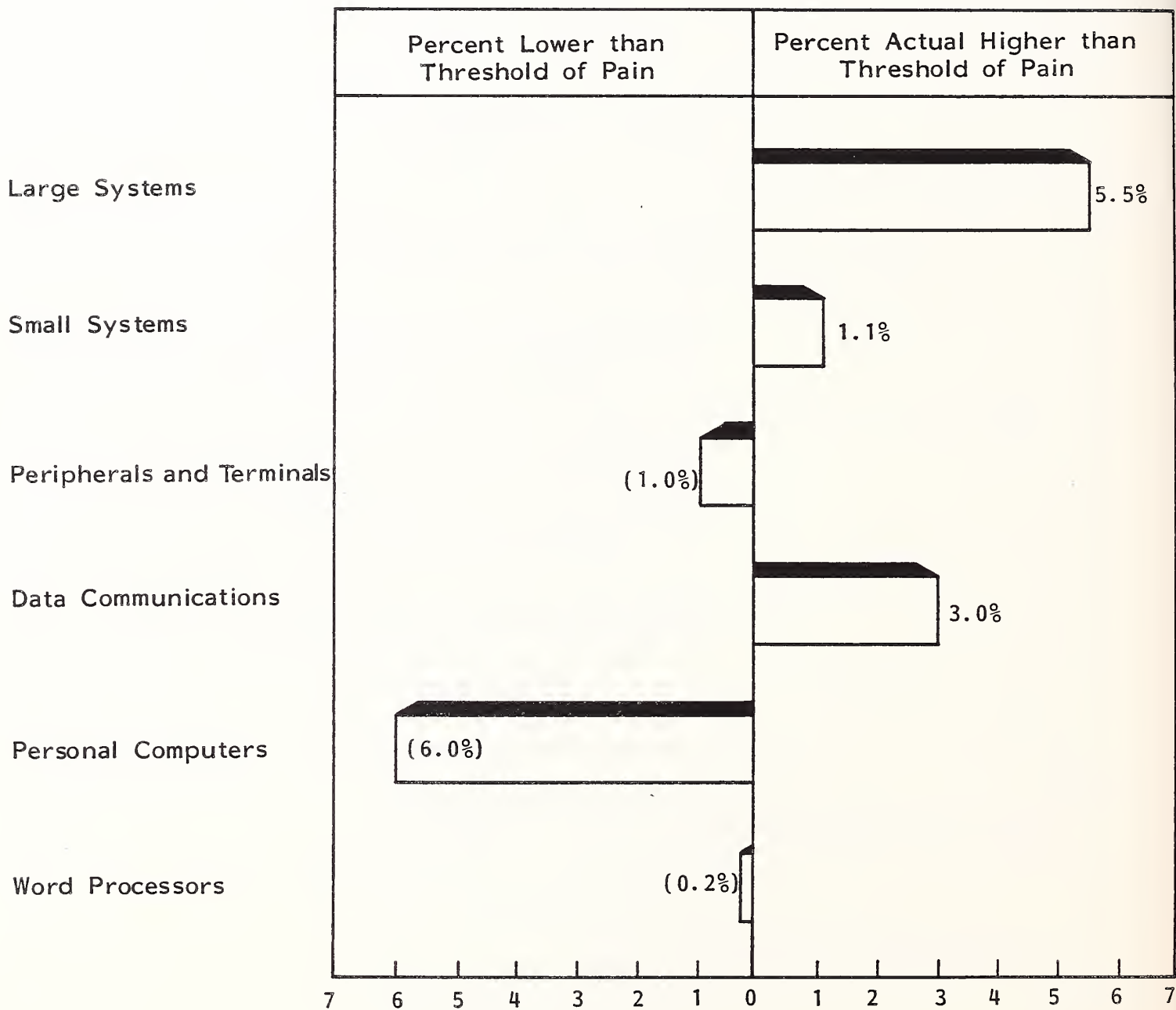
EXHIBIT VIII-8

SYSTEM AVAILABILITY: USER THRESHOLD OF PAIN  
BENELUX



# EXHIBIT VIII-9

## SYSTEM AVAILABILITY: ACTUAL COMPARED TO LOWEST ACCEPTABLE LEVEL BENELUX





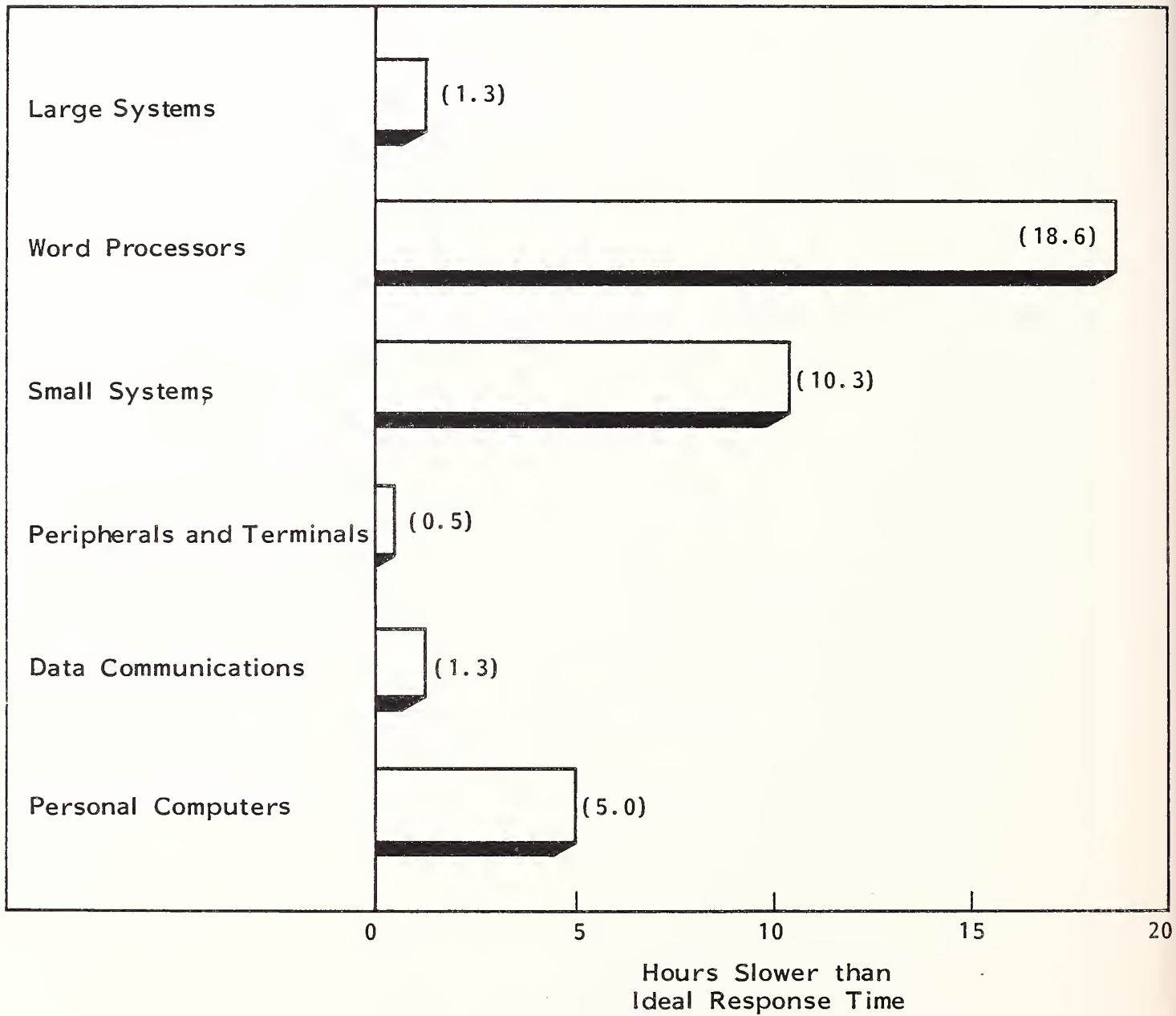
- Personal computers.
- Word processors.

#### E. RESPONSE AND REPAIR TIMES

- Exhibit VIII-10 shows that for every product group, vendors are not delivering the user ideal response time. In the case of small systems, the position is very poor indeed.
- When compared to the longest time that users are prepared to wait, however, the position is rather better, but in the case of PCs, current response times are still too long, as shown on Exhibit VIII-11.
- Repair times, too, are longer than users would like, but are generally within the limits of tolerance, as can be seen in Exhibits VIII-12 and VIII-13.
- The total time to fix, ranges from just over 5 hours up to almost 27 hours, as shown in Exhibit VIII-14. Exhibit VIII-15 demonstrates that for most product groups, the actual repair turnaround time is longer than the user ideal, but within their tolerance level.
- In the case of personal computers and word processors, however, current user experience is intolerable in that overall repair time is longer than the threshold of pain.

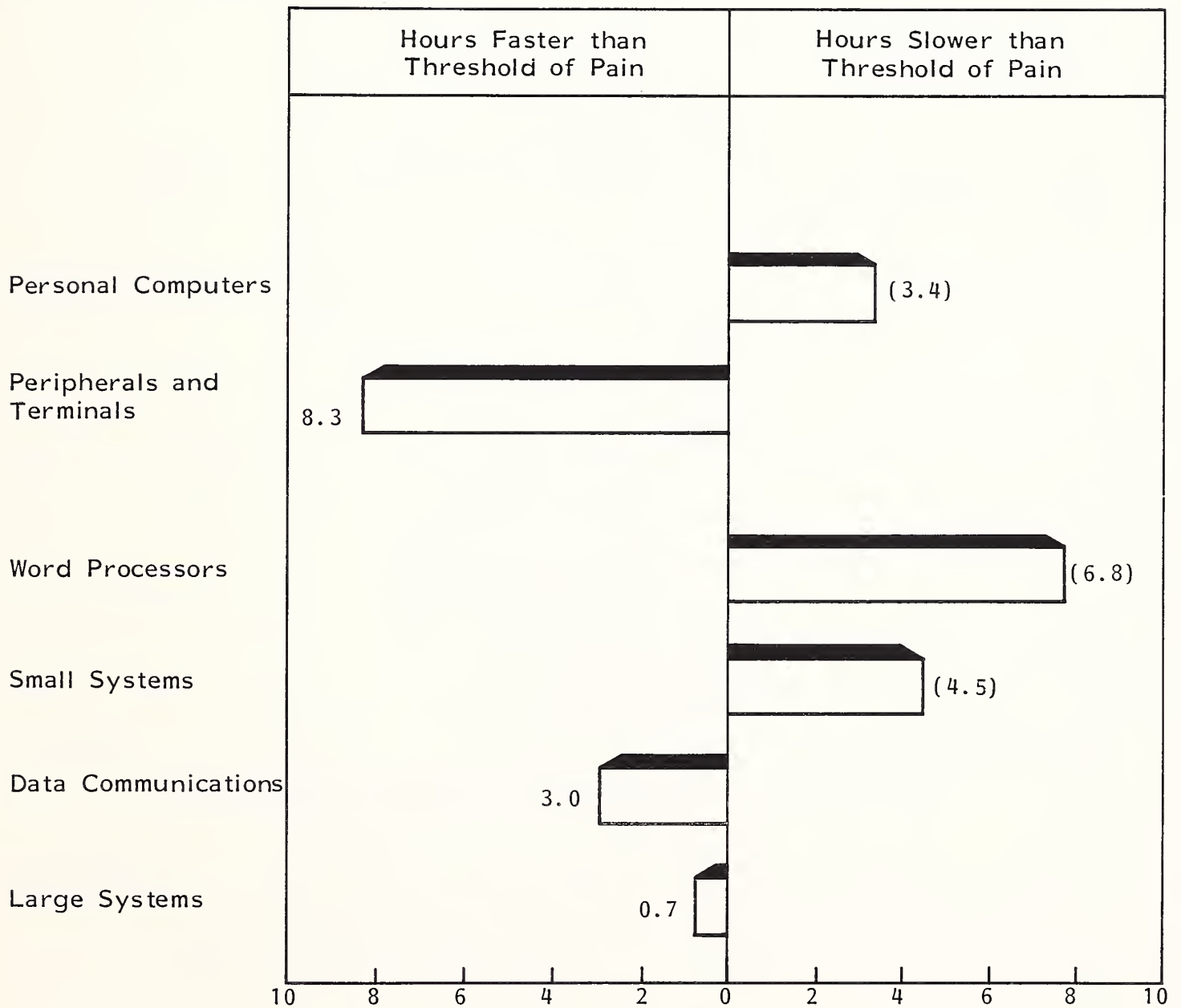
EXHIBIT VIII-10

ACTUAL RESPONSE TIME COMPARED TO IDEAL  
BENELUX



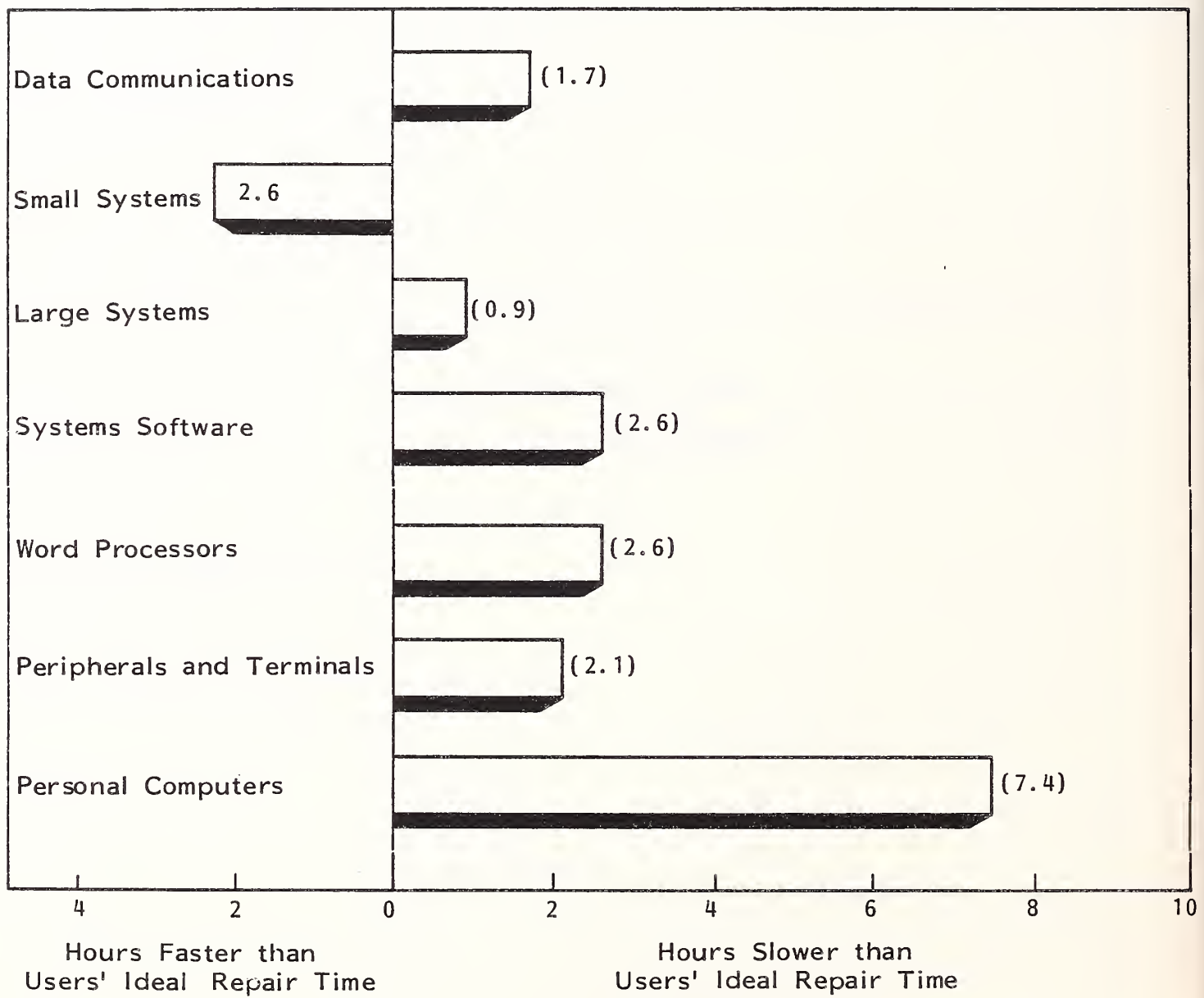
# EXHIBIT VIII-11

## ACTUAL RESPONSE TIME COMPARED TO LONGEST TIME ACCEPTABLE BENELUX



# EXHIBIT VIII-12

## ACTUAL REPAIR TIMES COMPARED TO USER IDEAL BENELUX



# EXHIBIT VIII-13

## ACTUAL REPAIR TIME COMPARED TO USER THRESHOLD OF PAIN BENELUX

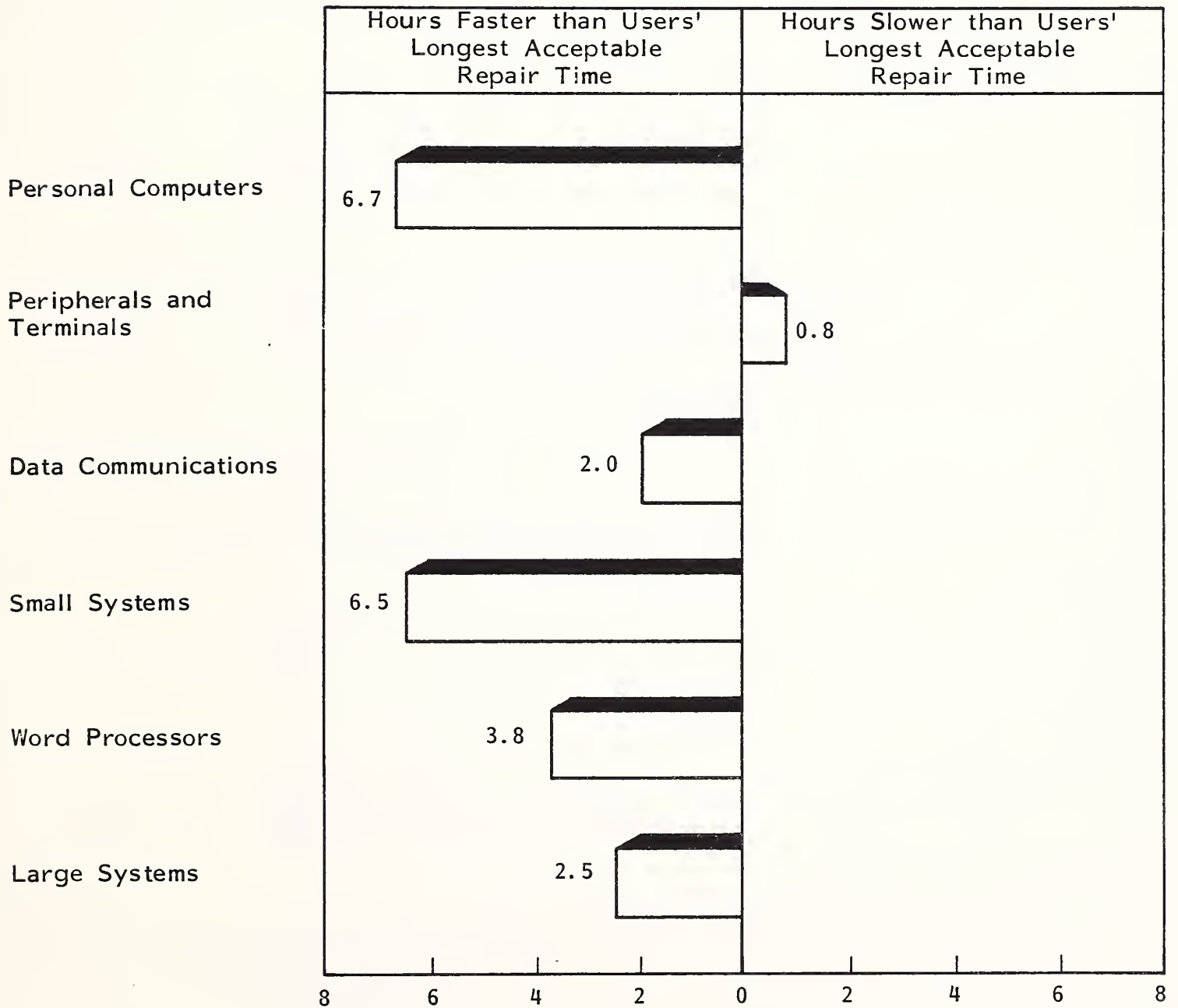
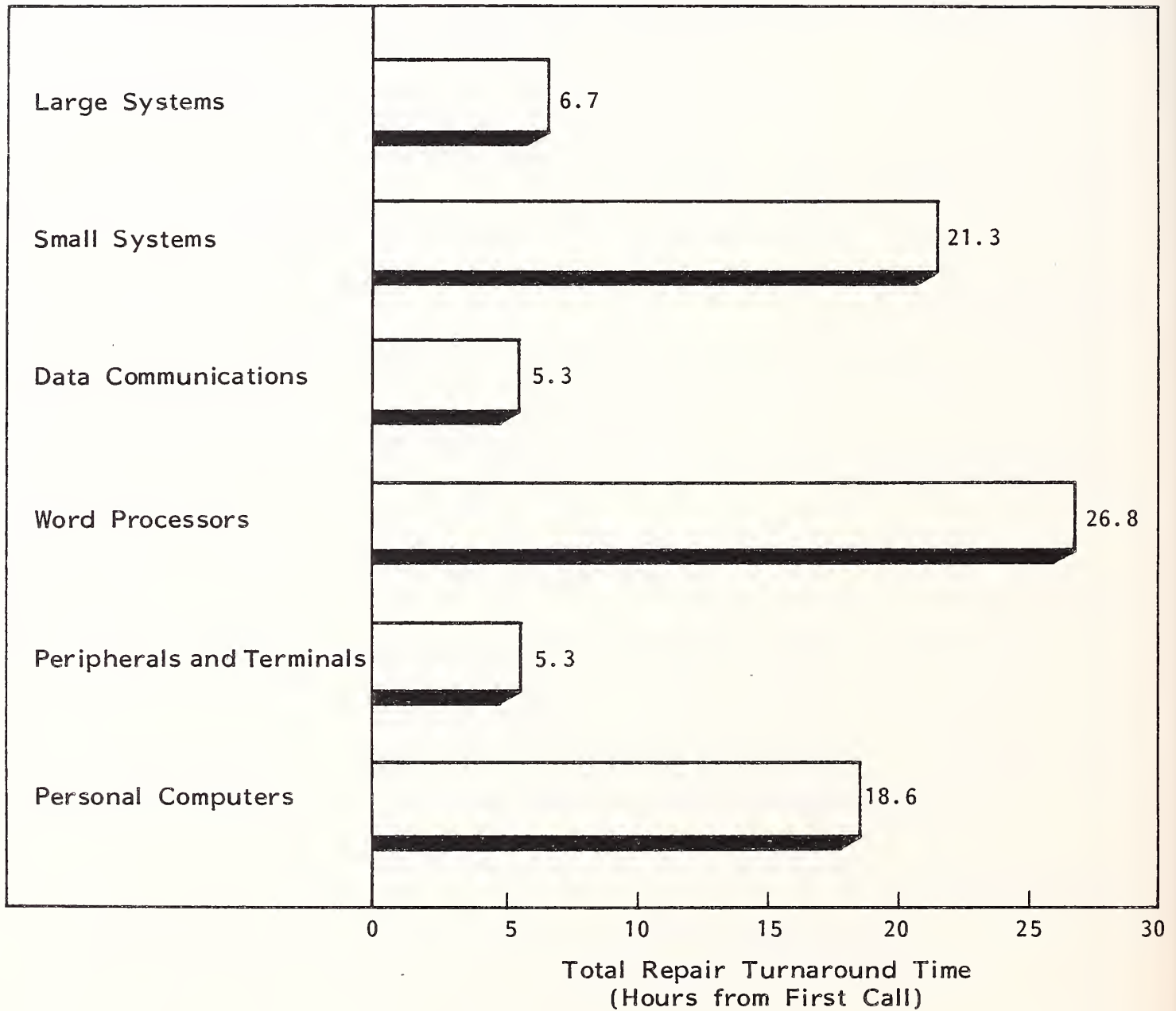


EXHIBIT VIII-14

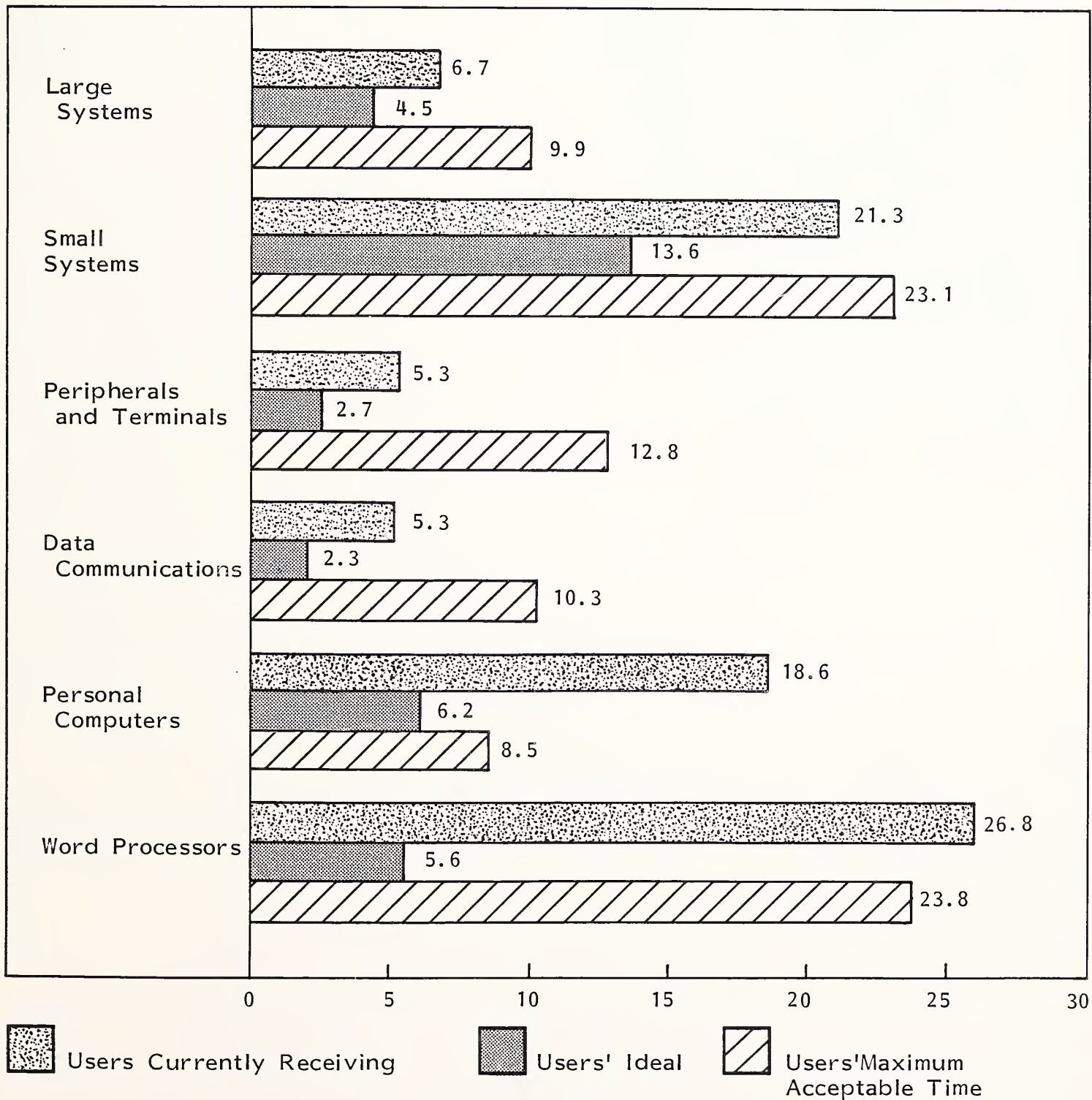
TOTAL REPAIR TURNAROUND TIME - USER EXPERIENCE  
BENELUX





# EXHIBIT VIII-15

## TOTAL RESPONSE/REPAIR TIME - BENELUX USER NEED AND VENDOR PERFORMANCE (Time in Hours)





## APPENDIX A: WORST FEATURES OF SERVICE - USER QUOTES



## APPENDIX A:        WORST FEATURES OF SERVICE - USER QUOTES

- 'Increasing cost for software service of declining quality'.
- 'High costs for limited expertise'.
- 'Inexperienced engineers, lack of hardware and software diagnostic tools, unreliability of equipment and software'.
- 'Lack of training given to customer service engineers on new products'.
- 'Lack of expertise on both hardware and software from suppliers'.
- 'PCB swapping between units to determine fault'.
- 'Failure to achieve first-time fix, particularly on peripherals such as printers'.
- 'Inadequate diagnostic skills - fault recurring within 24 hours'.
- 'Engineers often reduced to 'let's try this and see what happens'.'
- 'Different groups in the supplier's organisation do not communicate; my problems get passed around'.
- 'Long call-to-fix time does not recognise the importance of systems to our business function'.

- 'Service management's attitude to repairing faults out of prime shift'.
- 'Lack of interest by service management'.
- 'Inflexible field service management'.
- 'Lack of interest by engineers'.
- 'Faults are reported to a receiving centre where little or no hardware/software expertise is available'.
- 'Screening of all calls by a centralised system which does not take into account one's expertise'.
- 'Poor documentation regarding equipment problems'.
- 'Poor software documentation'.
- 'Failure to advise of all known software problems'.
- '(Vendor's) unwillingness to recognise software faults/inadequacies as such'.
- 'Long delay if more than one servicer is involved in solving the problem - they cannot agree who is to blame'.
- 'Continuity of people in software support function is a problem leading to old ground constantly having to be re-trod'.
- 'The engineer rarely carries necessary spares, meaning that downtime is longer than necessary'.
- 'Engineers spend too much time on the telephone while on-site'.
- 'Poor initial environmental advice'.



**APPENDIX B: MOST ANNOYING ASPECTS OF  
MAINTENANCE - USER QUOTES**



## APPENDIX B: MOST ANNOYING ASPECTS OF MAINTENANCE - USER QUOTES

- 'On-call maintenance charges--not the costs if an engineer is actually called, but the cost per hour for the facility'.
- 'Continually increasing costs with no improved quality'.
- 'High cost of maintenance for reliable equipment'.
- 'Difficulty in finding 'expert' advice if the engineer cannot solve the problem'.
- 'Engineers who invent 'outside influences' as causes of problems'.
- 'Arrogance of engineers--when they cannot fix the problem, they blame software, the PCM kit, or the operators'.
- 'Lack of awareness by engineers of the importance of prompt action and impact of machine downtime on a busy department'.
- 'Inflexibility of engineers, always arriving in prime time and taking longer than expected'.
- 'Poor overall service management and their amazing prices'.

- 'Engineering management who seem to think that a customer's maintenance is the least important thing in the world'.
- 'Attitude of some sales staff and CSEs that I expect too much and that failures of, e.g., five hours CPU outage, are to be expected'.
- 'Suppliers' unwillingness to allow or support third-party maintenance'.
- 'It appears to be treated like a T.V. repair--downtime is unfortunate, but not a disaster'.
- 'It is infuriating to have routine maintenance cancelled at short notice by the supplier'.
- 'Failure to inform us of already known problems which we consequently have to rediscover ourselves'.
- 'Not really knowing what has been done during maintenance'.
- 'Lack of information on progress to enable recovery procedures to be worked out'.
- 'Arguments on responsibility is grey area on remote sites'.
- 'High cost of spares for non-contract work, especially for unnecessary board changes'.

## APPENDIX C: QUESTIONNAIRE





# APPENDIX C

## QUESTIONNAIRE

1985 **INPUT** CUSTOMER SERVICE SURVEY — USERS

				IMPORTANCE OF SERVICE ISSUES Please rank these elements - (11 = most important, 1 = least important)											
Product Classification	Manufacturer of Your Equipment	Service of Your Equipment and Software (if different from Mfr.)	No. of Units	Systems availability	Response time	Repair time	Equipment reliability	Software maintenance	Price of maintenance	Preventive maintenance	Having same engineer each call	Remote diagnostics	Up time guarantees	Having a choice for service	Other (specify)
Large Systems (over \$200,000)															
Small Systems															
Peripherals and Terminals															
Data Communications															
OFFICE PRODUCTS	Personal Computer														
	Word Proc.														
	Work Stations														
	PBAX														
	Copier														
	Other														
SOFTWARE	System														
	Applic.														

# APPENDIX C (Cont.)

## QUESTIONNAIRE

QUALITY OF SERVICE 1 = Low 5 = Acceptable 10 = Excellent		YOUR RESPONSE TIME (in working hours from Call)	YOUR REPAIR TIME (in working hours from arrival)	YOUR WILLINGNESS TO AID SERVICER IF YOU RECEIVED DISCOUNT 1 = Unwilling 10 = Willing	YOUR WILLINGNESS TO PAY FOR EXTRA IMPROVED SERVICE Please Insert Percentage on base charge you would be willing to pay for:	PRICING	Large Systems	Small Systems	Peripherals and Terminals	Data Communications	Personal Computer	Word Proc.	Work Stations	PBAX	Other Fax	Other	System	SW	OA	FR	TE
Overall Quality																					
Quantity of Engineers																					
Quality of Service Management																					
Spare Parts Availability																					
Software Support																					
Preventive Maintenance Effectiveness																					
Remote Diagnostics																					
Communication																					
Product Reliability																					
Value for Money																					
Escalation Procedures																					
Solving Problems at First Call																					
Environmental Planning																					
Physical Site Planning																					
Installation Planning																					
Training																					
Documentation																					
Consulting																					
Site Audits																					
Relocation																					
De Installation																					
What are you currently getting?																					
What is the longest you can wait?																					
What is the current repair time?																					
Ideally what should it be?																					
What is the maximum time you would accept?																					
Helping to diagnose																					
Helping to replace boards																					
Helping to patch software																					
Diagnosing portable machines to repair																					
Guaranteed up time																					
Guaranteed response time																					
Guaranteed turnaround on software time																					
Software consulting from service																					
Software enhancements from service																					
Personalized service																					
Percent increase last year																					
Percent increase expected this year																					
Current contract prices too high - 10 Low = 1																					
Current contract prices too high - 10 Low = 1																					
Current county rates too high - 10 Low = 1																					
Extra shift rates too high - 10 Low = 1																					
Software support rates too high - 10 Low = 1																					

## APPENDIX C (Cont.)

### QUESTIONNAIRE

<p>In your opinion, what are the worst features of the service you are receiving?</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>Approximately what are your total expenditures for maintenance?</p> <table border="1"> <thead> <tr> <th></th> <th>Hardware</th> <th>Software</th> </tr> </thead> <tbody> <tr> <td>1984</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>1985</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>1986</td> <td>_____</td> <td>_____</td> </tr> </tbody> </table>		Hardware	Software	1984	_____	_____	1985	_____	_____	1986	_____	_____	<p>What is your attitude to remote diagnostics?</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
	Hardware	Software												
1984	_____	_____												
1985	_____	_____												
1986	_____	_____												
<p>What changes should the vendor take to significantly improve the level of service?</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>What is your attitude to preventive maintenance?</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>Have you considered using a Third Party Maintenance vendor, why or why not?</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>												
<p>What are the best or most positive aspects of service?</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>Do you receive any special pricing or discount on your maintenance?</p> <p>Plasa detail.</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>What really annoys you about maintenance?</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>												
<p><b>GENERAL INFORMATION</b></p> <p>Your name _____</p> <p>title _____</p> <p>company _____</p> <p>address _____</p> <p>_____</p> <p>_____</p> <p><input type="checkbox"/> Tick if you would like a summary of this</p>	<p>primary business of company _____</p> <p>total number of employees _____</p> <p>number of EDP employees _____</p> <p>total EDP budget for 1985 _____ 1986 _____</p> <p>are you buying new equipment in 1985? If yes, what? _____</p>	<p>ALL INFORMATION PROVIDED WILL BE TREATED IN THE STRICTEST CONFIDENCE. INPUT WILL NOT IDENTIFY OR DISCLOSE INFORMATION ON AN INDIVIDUAL BASIS.</p> <p>THANK YOU</p> <p>PLEASE RETURN A.S.A.P. TO:</p> <p><b>JOHN BULL</b>  <b>DIRECTOR</b>  <b>CUSTOMER SERVICE PROGRAM</b>  <b>INPUT LTD.,</b>  <b>AIRWORK HOUSE,</b>  <b>35 PICCADILLY,</b>  <b>LONDON W1V 9PB</b></p>												

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